

ENVIRONMENTAL ASSESSMENT BOARD



ONTARIO HYDRO DEMAND/SUPPLY PLAN HEARINGS

VOLUME: 14


DATE: Wednesday, May 15, 1991

BEFORE:

HON. MR. JUSTICE E. SAUNDERS	Chairman
DR. G. CONNELL	Member
MS. G. PATTERSON	Member

FARR
ASSOCIATES &
REPORTING INC.

(416) 482-3277



Digitized by the Internet Archive
in 2022 with funding from
University of Toronto

<https://archive.org/details/31761114681679>

A P P E A R A N C E S

B. CAMPBELL	)	ONTARIO HYDRO
L. FORMUSA)	
M. PAYNE)	
J.C. SHEPHERD	)	IPPSO
I. MONDROW)	
R. WATSON	)	MUNICIPAL ELECTRIC
A. MARK	)	ASSOCIATION
S. COUBAN	)	PROVINCIAL GOVERNMENT
P. MORAN	)	AGENCIES
C. MARLATT	)	NORTH SHORE TRIBAL COUNCIL,
D. ESTRIN	)	UNITED CHIEFS AND COUNCILS
		OF MANITOULIN, UNION OF
		ONTARIO INDIANS
D. POCH	)	COALITION OF ENVIRONMENTAL
D. STARKMAN	)	GROUPS
D. ARGUE)	
T. ROCKINGHAM		MINISTRY OF ENERGY
B. KELSEY	)	NORTHWATCH
L. GREENSPOON)	
J. RODGER		AMPCO
M. MATTSON		ENERGY PROBE
A. WAFFLE		ENVIRONMENT CANADA
M. CAMPBELL	)	ONTARIO PUBLIC HEALTH
M. IZZARD	)	ASSOCIATION, INTERNATIONAL
		INSTITUTE OF CONCERN FOR
		PUBLIC HEALTH
J. PASSMORE	)	SESCI
G. GRENVILLE-WOOD)	

A P P E A R A N C E S
(Cont'd)

D. ROGERS		ONGA
H. POCH	)	CITY OF TORONTO
J. PARKINSON)	
R. POWER		CITY OF TORONTO, SOUTH BRUCE ECONOMIC CORP.
S. THOMPSON		ONTARIO FEDERATION OF AGRICULTURE
B. BODNER		CONSUMERS GAS
J. MONGER	)	CAC (ONTARIO)
K. ROSENBERG)	
C. GATES)	
W. TRIVETT		RON HUNTER
M. KLIPPENSTEIN		POLLUTION PROBE
N. KLEER	)	NAN/TREATY #3/TEME-AUGAMA
J. OLTHUIS	)	ANISHNABAI AND MOOSE RIVER/
J. CASTRILLI	)	JAMES BAY COALITION
T. HILL		TOWN OF NEWCASTLE
C. REID	)	OMAA
B. ALLISON)	
E. LOCKERBY		AECL
C. SPOEL	)	CANADIAN VOICE OF WOMEN
U. FRANKLIN	)	FOR PEACE
B. CARR)	
F. MACKESY		ON HER OWN BEHALF

I N D E X o f P R O C E E D I N G S

	<u>Page No.</u>
<u>MITCHELL PIERSON ROTHMAN,</u> <u>PAUL JONATHAN BURKE,</u> <u>LILY BUJA-BIJUNAS; Resumed</u>	2401
Cross-Examination by Mrs. Mackesy	2406
Re-Cross Examination by Mr. D. Poch	2469
Cross-Examination by Mr. Klippenstein	2486
Cross-Examination by Ms. Spoel	2488
Re-Cross Examination by Mr. Mark	2522
Cross-Examination by Mr. Trivett	2543
 MOTION by Mr. Mark	 2510
 DECISION	 2520

LIST of EXHIBITS

No.	Description	Page No.
133	Set of graphs based on Figure 3.13; and load curves, comparative and typical daily.	2554

1 ---Upon commencing at 10:00 a.m.

2 THE REGISTRAR: This hearing is again
3 resumed. Please be seated.

4 MITCHELL PIERSON ROTHMAN,
5 PAUL JONATHAN BURKE,
6 LILY BUJA-BIJUNAS; Resumed

7 MR. D. POCH: Mr. Chairman, if I might
8 take the opportunity while everyone is settling in.
9 The Board may have read today in the Star there was a
10 decision of the National Energy Board with respect to
11 applications by Ontario Hydro for exports of power.

12 A decision, you may be aware that the
13 Coalition had -- a matter the Coalition had intervened
14 in, and indeed one of the exhibits that has been filed
15 is a study that was also filed at the NEB, the social
16 cost exhibit. The gist of the NEB's decision was to
17 defer decision on those aspects of Hydro's application
18 beyond the three-year period. Hydro had asked, I
19 believe, for a 10- or 15-year licence.

20 And the reason given was the reason
21 indeed we had urged them to accept, which was that the
22 environmental and social costs could best be judged
23 without duplication after the decision from this Board
24 was out. Knowing that you would be reading that in the
25 paper, I thought perhaps it best I speak to it most
briefly this morning just to...

1 As we understand the situation, that
2 would not entail any change to this hearing process
3 whatsoever. Simply that we assumed that the social and
4 environmental implications of power generation, clearly
5 a matter before you, your findings will be of interest
6 to all of us who will be active before the NEB at some
7 appropriate time.

8 The only distinction I think worth noting
9 is the NEB is primarily concerned with the incremental
10 impacts of operation as opposed to construction and new
11 capital investment.

12 And it may be appropriate, when we get to
13 the end of all of this, we will be asking the Board
14 where it is convenient for this Board to try to
15 distinguish in its findings between those two modes of
16 environmental impact, in that it would facilitate the
17 decision, if there is to be at the federal level,
18 without need of further inquiry or with limited need of
19 further inquiry.

20 So, we are having a copy of their
21 decision, which is quite brief, made, and we will file
22 it with the Board for your convenience.

23 THE CHAIRMAN: I am not aware of the
24 decision. I am perhaps not entirely aware of the
25 implications of what you are saying, but I would assume

1 that the bottom line is that whatever has been done by
2 the National Energy Board is -- we will conduct our
3 hearing within the mandate that we have and make the
4 decisions that we are called upon to make.

5 MR. D. POCH: Yes, sir. And I am really
6 just speaking to make the point that we had not
7 suggested to them that you would do otherwise, but
8 that, in the ordinary course of your efforts that your
9 work, would, in fact, facilitate theirs. Thank you.

10 THE CHAIRMAN: Before Mr. Grenville-Wood
11 starts, I would just would like to announce that we
12 propose that when Panel 1 is finished, we won't
13 commence Panel 2 until Tuesday morning, unless there is
14 any serious objection to that, which I don't expect
15 there will be.

16 So that if we finish Panel 1 today then
17 we will adjourn until Tuesday morning. If we finish it
18 tomorrow, we will adjourn until Tuesday morning.

19 MR. B. CAMPBELL: This is a worthy
20 objective.

21 THE CHAIRMAN: I wanted to provide some
22 incentives, I suppose, by announcing this early.
23 (Laughter)

24 MR. B. CAMPBELL: I hope that is not read
25 by any of my friends as an incentive to fill the

1 available hearing time this week.

2 THE CHAIRMAN: I am aware of Parkinson's
3 First Law but...

4 Mr. Grenville-Wood.

5 MR. GRENVILLE-WOOD: Good morning, Mr.
6 Chairman, members of the panel.

7 First I would like, with respect to the
8 transcript, there is a minor error which with the
9 consent of Dr. Buja-Bijunas I would like to correct.

10 On page 2369, line 4, her answer was
11 "That's an accurate description." The transcript says
12 "That's an accumulate description." And even
13 economists don't use that adjective. They use many
14 others but not that one.

15 THE CHAIRMAN: All right. Thank you.

16 MR. GRENVILLE-WOOD: Thank you.

17 Mr. Chairman, I have reviewed the
18 transcript and consulted with my clients and I have
19 reached the conclusion that the points that were made
20 yesterday were sufficient to establish the points we
21 have to make. So the decision has been taken that I
22 will ask no further questions. I must say that that
23 isn't motivated by your comments earlier, but I think
24 it goes in that direction.

25 THE CHAIRMAN: It fits in with them

1 anyway.

2 MR. GRENVILLE-WOOD: Thank you.

3 THE CHAIRMAN: The next is the Ontario
4 Metis and Aboriginal Association.

5 MS. MORRISON: They won't be
6 cross-examining.

7 THE CHAIRMAN: They will not be
8 cross-examining.

9 The Nipigon Aboriginal Peoples'
10 Association.

11 MS. MORRISON: I don't know about them.

12 THE CHAIRMAN: Who represents them; do
13 you know?

14 MS. MORRISON: Mr. Thatcher is the person
15 I talked to. Perhaps I should give him a call.

16 THE CHAIRMAN: If he is not here, I would
17 assume he doesn't want to cross-examine.

18 Mrs. Mackesy, you are next?

19 MRS. MACKESY: Thank you.

20 THE CHAIRMAN: Perhaps you could check.

21 MS. MORRISON: I couldn't reach him
22 yesterday but I will try and reach him this morning.

23 THE CHAIRMAN: Mr. Hunter is next on the
24 list after Mrs. Mackesy?

25 ---Off the record discussion.

1 THE CHAIRMAN: Mr. Poch, would it be
2 convenient for you to do your re-cross after Mrs.
3 Mackesy finishes?

4 MR. D. POCH: Yes, that would be fine.

5 THE CHAIRMAN: Mrs. Mackesy.

6 MRS. MACKESY: Thank you.

7 Now I have handed out two sets of
8 interrogatories to which I will be referring, to the
9 Board, and there are extra sets on one of the tables at
10 the back for anyone who wants to follow along.

11 Should I read the numbers of those
12 interrogatories into the record?

13 THE CHAIRMAN: No, I don't think you need
14 to. If you refer to them by number when you come to
15 ask questions about them, that will be sufficient.

16 MRS. MACKESY: Thank you.

17 CROSS-EXAMINATION BY MRS. MACKESY:

18 Q. Most of my questions are going to
19 relate to where the demand is for electricity. And
20 many of them are going to be clarifications of
21 Interrogatory Response 1.29.1. Some of these questions
22 may be better answered by Panel 2, so if the witnesses
23 want to refer them to Panel 2, just do so.

24 And Mr. Burke, I assume most of these
25 questions are going to go to you. So beginning with

1 1.29.1, I requested a listing of where the use of
2 electricity is in Ontario Hydro by operating area.

3 THE CHAIRMAN: We are having a little
4 trouble hearing you.

5 MRS. MACKESY: I'm sorry. I'm not very
6 used to these.

7 THE CHAIRMAN: Take your time.

8 MRS. MACKESY: Q. Now I believe that the
9 operating areas are divisions which are contained
10 within Ontario Hydro's regions. Can you confirm that?

11 There is a map, there are two maps
12 attached at the back, maps 1 and 2, which shows the
13 regions outlined in yellow and the operating areas
14 outlined in finer red lines within the regions. And
15 the names of the operating areas are in the smaller red
16 print on map 1, and in the black print on map 2.

17 Map 1 shows the situation in southern
18 Ontario and map 2 in the north, in northern Ontario.

19
20
21
22
23
24 ...
25

1 [10:12 a.m.] MR. BURKE: A. Yes. The operating
2 areas, I believe, are subdivisions of regions as you
3 described them, and I believe they correspond to the
4 areas for the retail system as well.

5 Q. That was one of my questions, okay.

6 Now, at the top of page 2, in the
7 response, it reads:

8 "Attached are customer forecasts of
9 each of Ontario Hydro's rural operating
10 areas."

11 Do these forecasts include use by all the
12 municipal utilities and the direct industrial customers
13 located within the operating areas as well as by the
14 rural retail customers within those operating areas? I
15 am assuming they do.

16 A. My assumption is that this refers
17 only to the rural retail customers and not to municipal
18 utilities or directs located on --

19 Q. There is a problem right there. When
20 I add it up, the megawatts, the peak load in megawatts,
21 taking the 1989 forecast - and I added those for each
22 of the operating areas in Tables 3 to 8 - I came up
23 with a figure of 23,662 megawatts.

24 A. Well, okay, then, if that is the
25 case, then I must be wrong. That is that the load for

1 '89 is the --

2 Q. That is the forecast load on page 3.
3 There are no totals given in this table. I had to add
4 up the numbers across the...

5 A. Okay. It was my understanding that
6 what you were getting was the load in the rural retail
7 system corresponding to those areas. But if, in fact,
8 it adds up to 23,600, you have got everything, that is
9 the combination of municipal utilities, direct
10 industrials and rural retail customers by area.

11 Q. That's what I wanted, because I
12 wanted to establish where the demand was in Ontario.

13 Mr. Chairman, can you hear me now?

14 THE CHAIRMAN: Yes, pretty well.

15 MRS. MACKESY: Q. The forecast tables on
16 page 3 to 8 list 50 operating areas. Would those be
17 the -- I'm sorry, the 50 area offices you mentioned in
18 the evidence-in-chief in Volume 2, page 354?

19 MR. BURKE: A. I think so, yes.

20 Q. Now, the maps I was provided with on
21 page 10 and 11; on page 10, it's difficult to read some
22 of the information, and now revised versions of Exhibit
23 79, that is the map, Ontario Hydro's systems map
24 showing transmission facilities and municipal
25 utilities, has been filed, and it shows regions and

1 districts. And the districts in the revised Exhibit 79
2 seem to match the boundaries for the operating areas
3 that I have been provided with in Map 1 attached to
4 1.29.1.

5 Could you confirm that the areas, as
6 shown on page 10 in 1.29.1, match the districts, as
7 shown in the Exhibit 79? Or should I ask Panel 2 that?

8 A. Well, I can't confirm that; I am not
9 familiar with that map.

10 Q. Okay.

11 A. All I can say is that this map is a
12 very recent map. So Exhibit 79 is equivalently --
13 these things have changed. If it's equivalent, at
14 least they can be compared, but I cannot say myself.

15 Q. Okay. I was told in March by Hydro
16 staff that the attachment 1.29.1 was the most recent
17 map.

18 MR. B. CAMPBELL: Mr. Chairman, I believe
19 that's correct. Why don't we leave it this way, if the
20 districts as shown on that map are different from the
21 operating areas, we will let Mrs. Mackesy know, but if
22 you don't hear from us, silence is consent. Then she
23 doesn't have to wait until the next cross-examination
24 to get this straightened up.

25 THE CHAIRMAN: Perhaps, just let her know

1 if it is the same.

2 MR. B. CAMPBELL: That is fine.

3 MRS. MACKESY: Thank you.

4 Q. Now, before I get into the forecast
5 tables, I would like to speak to page 9 of 1.29.1, and
6 the fastest way to handle this might be for me to give
7 my impression of what it is, and then the panel could
8 make corrections if they think I am wrong.

9 The page is needed because it reconciles
10 the operating area names in the forecast tables with
11 the names on the Maps 1 and 2.

12 MR. BURKE: A. Are we looking at the
13 alphabetical listing of area offices?

14 Q. Yes, yes.

15 Now, in my interrogatory, I had asked for
16 the name of the largest urban centre in each operating
17 area as a way of identifying where the operating areas
18 were, because in the earlier map to which I referred in
19 my request, only the area names were given and no
20 community names were given, and I was finding it
21 difficult to find, myself, exactly where the areas
22 were, in relation to cities and towns and counties.

23 Now, what Ontario Hydro gave me in 1.21
24 is a list of the locations of operating area offices,
25 matched to the operating name, and that is fine for my

1 purposes as far as locating them. But there are some
2 complications with the list on page 9.

3 In forecast tables, pages 3 to 8, there
4 are 50 areas listed but not all of those area names
5 appear on the maps. The operating area names on the
6 left side of the page 9, that's under the column headed
7 "Area," match the names on the two attached maps for
8 all the areas except the Toronto section. And there
9 are 45 names in that left-hand list, not 50, so there
10 are five extra names in tables, on pages 3 to 8.

11 Of those those five extra names, five appear in
12 the listing under "Location" on the right-hand side of
13 page 9, that would be the listing of location of area
14 offices. Orangeville is put together with Alliston.
15 That's about a third of the way down the page, and
16 these apparently are the location of the area offices
17 for the area named Hockley Hills. So Hockley Hills
18 appears on Map 1, but in the forecast tables, the peak
19 load for Hockley Hills is listed under Alliston and
20 Orangeville.

21 Going on, Warren is put together with
22 North Bay under the area named Nipissing. That's
23 two-thirds of the way down page 9. So that Nipissing
24 appears on the map on page 2, but in the tables the
25 load for that area is split between North Bay and

1 Warren.

2 And lastly, Lincoln is put together with
3 Dundas, that's about four lines below North Bay and
4 Warren. So that the name "Peninsula" appears on Map 1,
5 but in the forecast tables, the load is split between
6 Dundas and Lincoln.

7 Do you follow me so far?

8 A. Yes, I have. I think, perhaps, it's
9 pertinent to observe that the data we have, I think it
10 is referred to in 1.29.3 -- sorry, one of the
11 interrogatories that you asked led to a response which
12 indicated that we had historical data for the area
13 offices, as they were defined up to about 1988, and
14 that in '89 or '90, '89 I think it was, or '88, there
15 were changes to the definitions which included the
16 sorts of changes that led to Georgian Bay region retail
17 being different, and central region wholesale being
18 different, than its previous definition. And in the
19 course of all of these things, I think there have been
20 amalgamations of various area offices.

21
22
23
24 ...
25

1 [10:20 a.m.] The data we have, though, in order to
2 preserve historical continuity, is the data prior to
3 those things and that is why, when we are giving you
4 history in forecasts, we are giving it to you for the
5 older jurisdictions. And if it seems like an
6 inconsistency between the two sets, the map and the
7 listing on page 9 are the current--

8 Q. Yes?

9 A. --way of looking at it. We have not
10 changed our historical data base and forecast process
11 to match these, but as I understand it, it is simple
12 adding up; that is, Alliston and Orangeville. It's not
13 as if the boundaries of each of them have changed.
14 It's just that both of them are now together under
15 Hockley Hills.

16 Q. I see. So, all of
17 Alliston/Orangeville is included within Hockley Hills?

18 A. Yes.

19 Q. And there isn't any part of
20 Alliston/Orangeville that is outside Hockley Hills?

21 A. I don't believe that is the case, and
22 similarly with Nipissing/North Bay, wherein I believe
23 that, again, it is a combination of two previous area
24 offices.

25 Q. Okay. I think that number,

1 interrogatory number to which we're referring might be
2 1.29.4. "Ontario Hydro has realigned regional and
3 operating area boundaries many times in the past, which
4 improved administrative effectiveness." It says that
5 there.

6 A. My recollection is, somewhere we
7 indicated that our data was based on the old approach.

8 Q. Oh. Now, going on then to the
9 Toronto section, there are two areas listed in the
10 tables, pages 3 to 8, and these appear on page 3, Metro
11 and Markham.

12 Now, those names don't appear on page 9
13 and they don't appear on the maps, but I was told by
14 Ontario Hydro staff in March that Metro and Markham
15 together make up the Central Region, which includes
16 Toronto.

17 Map 1 shows Lakefront as the only area
18 named in the Central Region, and there is no Lakefront
19 in the forecast tables on page 9. But I am taking it
20 that Metro and Markham together make up the Central
21 Region. I believe Mr. Campbell was going to have this
22 confirmed for me for Panel 2?

23 MR. B. CAMPBELL: That is correct.

24 MRS. MACKESY: Okay.

25 MR. B. CAMPBELL: That has been brought

1 to their attention, and as I say, as in the other case,
2 I hope to get you an answer earlier than that.

3 MRS. MACKESY: Q. Could I, as far as
4 today's cross-examination, carry on with the assumption
5 that Metro and Markham are within the Central Region
6 and make up the Central Region?

7 MR. BURKE: A. Well, it is certainly the
8 case that Metro and Markham are in the Central Region.

9 Q. Yes?

10 A. But I must admit, it was not my
11 understanding that they were the total of the Central
12 Region.

13 Q. Oh, okay.

14 A. And I am just wondering whether there
15 is a way I can check that for you here.

16 Q. I didn't see any other names on the
17 table that didn't fit within the other regions, but...

18 A. All right. Well, let's leave it that
19 you are correct, and I will --

20 Q. Until I hear otherwise?

21 A. Yes.

22 Q. Okay, good. Thank you. Now, moving
23 on to the actual use and forecast tables on pages 3 to
24 8, these tables are not really a local forecast table,
25 I would take it, because there are several local

1 communities, and maybe several municipal utilities,
2 within each operating area?

3 A. Yes. There would be one forecast
4 prepared for the areas outside municipal utilities in
5 direct industrial, one forecast for the rural retail
6 system within that area office, operating area and, as
7 we say, there could be several municipal utilities and
8 direct industrial customers, as well.

9 Q. Yes. Now, I am not asking for
10 another forecast, but if a person wanted forecast
11 listings of a more local nature, would it be possible
12 to get tables such as these for each of the roughly 500
13 Hydro customers mentioned on page 355 of Volume 2?

14 A. We do not supply forecasts for direct
15 industrial customers, as they are provided to Ontario
16 Hydro on a confidential basis by those customers. As
17 far as individual municipal utility forecasts, it is
18 not our practice to release those, but perhaps some
19 arrangement could be made for--

20 Q. No. I am not asking for that at the
21 moment. I am just asking what the situation is.

22 A. --those individual utilities.

23 Q. And what about the rural retail
24 section outside what's left.

25 A. My sense is that the area office

1 forecast, because that is essentially an Ontario Hydro
2 product, is available.

3 Q. Okay. Now, what type of forecast is
4 this; a basic, primary or firm?

5 A. The customer forecast is intended to
6 be a basic forecast.

7 Q. Okay. And what is the date? I am
8 assuming it is 1989 that this is...

9 About halfway the page, page 3, it says,
10 "Load Forecast Report 89/12/11," so I am assuming these
11 figures are from the '89 forecast?

12 A. Yes. That is correct.

13 Q. Okay. And they would refer to the
14 situation then in Exhibit 8, the '89 forecast document?

15 A. That is correct.

16 Q. Okay. Now with respect to the
17 tables, I am going to ask for more explanation of what
18 the terms "actual," "unallocated load," "forecast," and
19 "projection" mean, in the context of these tables. So
20 with regard to "actual," that would be the actual peak
21 load in January, year by year, from 1963 up to 1988?

22 A. Yes. That is correct.

23 Q. And by "peak load," would that be a
24 20-minute peak or the one-hour peak?

25 A. I believe it is a 20-minute peak.

1 Q. And the "forecast"; is that the
2 short-term forecast between 1989 and 1994?

3 A. Yes.

4 Q. And what does "unallocated load" mean
5 in this context?

6 A. Essentially, the difference between
7 the sum of the customer forecasts and the recommended
8 forecast for planning purposes, the recommended basic
9 load forecast for Ontario for planning purposes. There
10 usually is a difference between those two.

11 Q. Yes?

12 A. In the first five years of the
13 forecast, there may be a sense that the customers have
14 not correctly taken into account some trends or other,
15 and so an adjustment is made and that difference has
16 come to be known as "unallocated load" - seems like a
17 rather convoluted reason - because, in fact, it is
18 allocated. It is prorated to the Regions.

19 Q. To the Regions?

20 A. Yes.

21 Q. And to the operating areas within the
22 Regions?

23 A. Well, to the operating areas, but not
24 to the individual customers.

25 Q. Okay. Because there may be several

1 customers within an operating area?

2 A. That is right.

3 Q. And it has been prorated to the
4 operated areas?

5 A. And then --

6 Q. And on this table?

7 A. That is right.

8 Q. All right. And in a situation where
9 there is over 23,000 megawatts, when you add up the
10 loads across these pages, about how much of that would
11 be the unallocated load?

12 A. Well, it very much depends on each
13 year of the forecast--

14 Q. Oh.

15 A. --and that information is contained
16 in a section of each annual report for the 1989 load
17 forecast.

18 Page 10 of the 1989 report --
19
20
21
22
23

24 ...
25

1 [10:33 a.m.] Q. That's Exhibit No. 8, page 10?

2 A. Yes. Actually the data is -- this is
3 Exhibit No. 8, yes, at page -- the actual data is given
4 on page 11.

5 Q. Okay, thank you.

6 A. And it shows that in 1989, there was
7 very little unallocated load, but by 1994, there is
8 roughly a thousand megawatts of unallocated load
9 relative to the customer survey forecasts of about
10 26,000 megawatts.

11 Q. What goes into this unallocated load?
12 What are the...

13 A. How do we determine that?

14 Q. Yes. What was it composed of?

15 A. Well, in aggregate, it is the
16 difference between, as I said, the sum of the
17 customers' results and -- well, the sum of the
18 customers' results and the equivalent forecast that we
19 are producing, considering -- sorry, the recommended
20 forecast that we produce for the short term,
21 considering the result of models and their forecasts of
22 the Ontario total load.

23 One of the things that we are able to do
24 at a provincial level and looking out, especially
25 beyond the first year or two, is to factor in our view

1 of the trends in the Ontario economy; and at the very
2 local level, that sort of issue is much more difficult
3 to take into account specifically. So, we are getting
4 an aggregate indication of what the Ontario economy is
5 likely to do. We are not claiming to understand what a
6 local economy will do in the two- to five-year time
7 horizon.

8 We think that the local forecasters
9 probably have a pretty good handle on the next year or
10 two, but there may be sort of cyclical patterns,
11 turn-arounds, slow-downs, whatever, that we are
12 forecasting for the provincial total that yield a
13 different forecast than if we continue the current
14 trend, which is the usual pattern in the customer
15 forecasts. That is, the customer forecasts tend to
16 perpetuate the recent historical trends. If load
17 growth has been strong, the forecast tends to maintain
18 that. When load growth turns low, they tend to
19 maintain that and we have more of a cyclical pattern in
20 our provincial total forecast.

21 Q. So the unallocated load could be a
22 plus or minus?

23 A. That's correct.

24 Q. Now, going on to projection, what is
25 the difference between forecast and projection on these

1 tables?

2 A. Well, the load forecast report is the
3 document.

4 Q. Yes.

5 A. That's the name of that document.

6 Beyond 1995, and what you have got is the
7 projection I was referring to, either yesterday or the
8 day before, which is prepared for transmission planning
9 purposes.

10 I don't know whether there is a fine line
11 between what is a forecast and what is a projection,
12 but in this case, essentially, it is the weights of the
13 individual area offices and their relative growth rates
14 that are perpetuated into the future in a fairly
15 mechanical way.

16 The forecast is constrained once we get
17 into the mid-term and long-term portion to add up to a
18 total long-term forecast, but I don't think it would be
19 fair to say that specific local judgments are made
20 about how trends in those area offices would change
21 beyond 1995. Essentially, this is an extrapolation of
22 the past trends, including the forecast to '94, in this
23 case, on out to 2015, and sometimes beyond that.

24 So, usually the word "projection" and
25 "forecast" are synonymous. In this case, all we are

1 trying to indicate is this is an extrapolation of the
2 trends in the period to '95. We are not going to claim
3 that we have analyzed for each of those areas specific
4 trends in that long term.

5 Q. And this is a projection that the
6 forecast department would make at Ontario Hydro; this
7 isn't a projection that comes out of the area offices?

8 A. The area offices take us out to the
9 first five years.

10 Q. Yes.

11 A. And then we do that extrapolation,
12 you might say.

13 Q. There are average growth rate figures
14 at the bottom of each of the forecast pages. Are these
15 the average growth rates for each year, within the two
16 periods specified, 1989 to 2015, and 1998 to 2015?

17 A. Well, the way I would interpret this
18 is that the first line, that is the one labelled 1989,
19 is the average growth rate between 1989 and 2015; and
20 the second line gives the average growth rate between
21 1998 and 2015.

22 Q. So each year would accumulate at the
23 rate -- predicted to accumulate at the rate listed.

24 A. In other words, the -- let's not
25 choose the first one.

1 Q. Okay.

2 A. Say, under Metro, the growth rate I
3 would expect would be, for the first line would be the
4 ratio of the 10,333 for 2015 to 6,200, probably to the
5 1988 for the 6,203.

6 And the ratio of that and, effectively,
7 the 26th root of it, is the compound growth rate over
8 26 years; whereas, the second number starts from the
9 end of the mid-term projection. That would be 10,333
10 divided by 7,511, the 1988 value.

11 Q. I can't do that mathematics in my
12 head. I will just accept that.

13 A. Yes, okay. Yes, that's what we've
14 got.

15 Q. Now, I am trying to relate growth
16 rate to absolute size of increase. And if you start
17 from a large megawatt amount, such as in Metro in 1988,
18 you could apply a smaller growth rate to that amount
19 and yet get a larger absolute increase in the peak,
20 than if you started from a smaller megawatt amount and
21 applied a larger growth rate to it.

22 A. Yes.

23 Q. Now can you tell me how exports are
24 handled in this forecast?

25 A. We have replied to one of your

1 interrogatories on that, and exports are no part of
2 this at all. This is a forecast related to primary
3 sales, not secondary sales as we define it. Secondary
4 sales would include exports.

5 Q. And is there a separate forecast for
6 exports. Do you do one for that?

7 A. I don't prepare it and I am not sure
8 for what period it is, in fact, prepared. I think you
9 would have to address another panel on that.

10 Because exports are only made from
11 capacity which is deemed to be surplus to Ontario's
12 needs, it is something that comes after the planners
13 have determined what, in fact, that capacity and energy
14 availability is.

15 MRS. MACKESY: Mr. Campbell, could you
16 tell me which panel that would... I have had some
17 answers to Panel 2 regarding...

18 MR. B. CAMPBELL: I think Panel 2 can
19 certainly speak to how exports are made from the
20 existing system. There is no part of the planning
21 except in one very minor circumstance that the matter
22 of exports affects the various considerations that go
23 into planning to meet Ontario requirements; that is,
24 there is nothing in this plan that is being built for
25 export purposes, so we have not focussed any

1 significant part of our evidence on a forecast of
2 exports.

3 I believe we do in one portion of the
4 case in the economic analysis, which I think would be
5 coming forward in Panels 10 or 11, make a statement
6 that at some off-peak times, it would be contemplated
7 there would be a surplus of nuclear generation. For
8 instance, I know that that happens sometimes at spring
9 pressures in the middle of a Sunday or something like
10 that.

11 In those kinds of circumstances, I
12 believe there has been something included in the
13 economic analysis for the possibility that sales could
14 be made from that surplus nuclear, but I think that is
15 a Panel 10 or 11 matter. And as I say, really, the
16 planning decisions that we are asking from this Board
17 are not driven by exports in any significant respect
18 whatsoever. So we haven't worried very much about
19 forecast exports and I don't believe we plan to bring a
20 forecast of exports before the Board.

21 MRS. MACKESY: If I wanted to request
22 further information on that, would I do that through
23 Panels 10 or 11 in interrogatories?

24 MR. B. CAMPBELL: On the aspect that I
25 spoke as to how export considerations might affect

1 those planning decisions?

2 MRS. MACKESY: Yes.

3 MR. B. CAMPBELL: That would planning
4 panels, I believe, Panels 10 and 11. And I hope I have
5 made it clear the limited way in which we anticipate
6 dealing with that in the planning?

7 MRS. MACKESY: If I were to ask for more
8 detail about the exports' forecast...

9 MR. B. CAMPBELL: I think I would have to
10 look at the particular question. We do take the
11 position, Mr. Chairman, that given that we are not
12 building facilities for export purposes, that is
13 generation facilities for export purposes, we do not
14 propose to bring before you in any significant way any
15 forecast of the potential for exports.

16 MRS. MACKESY: Q. Now, returning to
17 pages 3 to 8, how does the long-term projection deal
18 with uncertainty?

19 MR. BURKE: A. That has been a big
20 question here.

21 Q. I mean with regard to this table. I
22 don't mean with regard to the forecast.

23 A. Oh, with regard to this table, you
24 mean?

25 Q. Yes, yes. I don't want to go to the

1 other.

2 A. You mean, do I have --

3 Q. You are saying this is a mechanistic
4 extrapolation.

5 A. From 1994 on, it is. From 1989 to
6 '94, it is the area office, the customers in those
7 operating areas, "load-adjusted," as it says for the
8 unallocated load. The treatment of uncertainty for
9 each of the area offices is not analyzed.

10 Q. I have just lost my train of
11 thought...

12 This is a median forecast that you're
13 working with here?

14 A. That's right. Each of the customers
15 supplies us with their most likely forecast, and it is
16 compared to our median or most likely forecast and that
17 is the extent of it. We do not try to put uncertainty
18 measures on the forecast.

19 Q. And this is a peak load forecast and
20 not an energy forecast?

21 A. Well, just trying to see if that's
22 what you asked for.

23 Q. Yes, I asked for for the peak, and it
24 is only through attending these hearings I am becoming
25 aware of the...

1 A. And in fact the--

2 Q. Seeing the difference?

3 A. --peak is the form in which we get
4 the estimates from our customers and we have to, if we
5 wish to derive energy we derive it ourselves--

6 Q. I see.

7 A. --from the peak.

8 Q. Do you do that by operating area?

9 A. Well, we have it for each of the
10 customers and so the table -- yes, we can get the data
11 in terms of energy, yes.

12 Q. Is it difficult to do that?

13 A. No, I believe that if we have these
14 tables for peak, we also have them sitting somewhere
15 for energy.

16 Q. I see. If one were to rank each
17 operating area by peak demand and by energy use, is it
18 likely that each operating area would have the same
19 rank in the peak listing as in the energy listing?
20 Is that not really answerable without doing the --

21

22

23

24

...

25

1 [10:50 p.m.] A. I don't know the answer to that
2 question. Chances are good, but I really don't know. I
3 would have to do it.

4 Q. How much work would be involved in
5 getting an energy load forecast, not year-by-year, as
6 in this table, but at 5-year intervals by operating
7 area?

8 A. Well, I think you could get the
9 equivalent to this table for energy.

10 Q. And not only for the forecast, but
11 also working back at 5-year intervals through the
12 actual?

13 A. Sorry, you mean historically?

14 Q. Historically, yes.

15 A. I believe, yes, we have the same
16 information for energy.

17 The only thing I am not absolutely sure
18 of is for the period beyond 1995, whether we have
19 energy as readily available as we do for peak. But I
20 do know that up to 1995 we have them equivalently for
21 energy peak. It really is a question of what we supply
22 to the transmission people and I am not sure. But
23 certainly up to 1994 we have the equivalent information
24 for energy and I would hazard that we probably have the
25 same information for energy beyond 1995. That's what I

1 am not sure about, I will have to check.

2 THE CHAIRMAN: Is my understanding
3 correct, that you apply a constant load factor to all
4 of these peak forecasts in order to determine energy?

5 MR. BURKE: Yes, beyond 1995 that would
6 be --

7 THE CHAIRMAN: Beyond 1995 would be the
8 same, but for each year would be the same, the same
9 load factor?

10 MR. BURKE: Beyond 1995, the aggregate
11 load factor is the same, and how that corresponds to
12 each individual customer, I am not sure, beyond 1995.
13 That's the aspect I am not sure about.

14 Certainly, it is not necessarily the case
15 that if you applied a constant load factor to each of
16 these customers you would end up with a constant load
17 factor in aggregate, because each of the customers has
18 different load factors and grows at different rates.
19 And so, if you happen to have --

20 THE CHAIRMAN: You are confusing me.
21 Just a moment. Each customer has its own load factor?

22 MR. BURKE: Yes, and, historically, it
23 has its own load factor.

24 We have been talking about the way we
25 translate total system energy into total system peak,

1 and that is the way we do it. Effectively, the period
2 from 1995 on, at the area office or customer level is a
3 forced fit. Essentially, we are saying, we have
4 already got a long-term forecast in aggregate, we have
5 patterns that we have observed in the customer loads up
6 to 1995, relative to each other and in relationship
7 to -- their relationship to peak and energy, certainly;
8 but we are not forecasting, we do not put an extra
9 analysis into forecasting what is going to go on in
10 each of the area offices beyond 1995, to know whether
11 we have a view as to the load factor or anything.

12 Essentially, we would take the
13 information from 1995 to 2015, and find a way that it
14 consistently adds up to our total long-term load
15 forecast, which is constrained above to have a constant
16 load factor.

17 THE CHAIRMAN: But your customers supply
18 you with their peak forecasts?

19 MR. BURKE: For the first five years,
20 yes.

21 THE CHAIRMAN: And you take that data and
22 you use it to do your energy forecasts; is that not
23 right?

24 MR. BURKE: We do have to analyze load
25 factors for those customers to convert the peak

1 information they give us to energy, yes.

2 THE CHAIRMAN: And what your models are
3 producing are energy forecasts.

4 MR. BURKE: That's correct.

5 THE CHAIRMAN: So this data has to be
6 converted.

7 MR. BURKE: Converted.

8 THE CHAIRMAN: And then, when you get
9 your energy forecast, the next step is to apply your
10 overall load factor to obtain your peak forecast?

11 MR. BURKE: Well, in the short-term, it
12 is the load factor that comes out of the sum of the
13 customers' load factors, but after, as we enter the
14 long-term, we freeze it at that last year's value from
15 the sum of the individual customers -- well, the
16 weighted sum of the individual customers' load factors.

17 So, effectively, we use the analysis of
18 the customer load factors for the first five years to
19 determine the total system forecast. But going beyond
20 five years, it's frozen at the last year's value. And
21 that aggregate total system load factor is what is used
22 to convert the energy forecast that we develop for the
23 long-term into a peak load forecast.

24 And then, actually, this exercise and the
25 reason we are only supplying 1989 information here,

1 this exercise comes after all of that. Once we have
2 the total system load forecast for 1990, for instance,
3 then we can go back and try to say, what are the
4 implications of that at the customer level beyond 1995?

5 Because, as I say, we do not put any
6 effort into trying to bring insight to bear on the
7 particular area offices and the customers in them
8 beyond 1995. It becomes a -- given an exercise in
9 looking at the past trends and extrapolating them in
10 such a way that they fit within of the envelope of the
11 total system beyond 1995.

12 THE CHAIRMAN: Excuse me, Mrs. Mackesy.
13 Go ahead now.

14 MRS. MACKESY: Thank you.

15 Q. You used the term "weighted sum."
16 What do you mean by weighted?

17 MR. BURKE: A. Well, if you have the
18 load factor for a large number of customers, each of
19 them having different peaks, then, really, you are
20 weighting -- to get the viewer to try to derive the
21 aggregate load factor, it would be a function of the
22 load factor of each customer, times their peak itself.
23 So that large customers' load factors contribute more
24 to the total system load factor than small customers'
25 load factors.

1 Q. Okay. Now, I believe you were saying
2 that energy forecasters concentrate on energy rather
3 than peak because it better relates to economic
4 activity.

5 A. Yes.

6 Q. This was in Volume 2, pages 352 to
7 53.

8 So, if you wanted to get an idea of where
9 demand is in Ontario, it would be better to ask for an
10 energy forecast than a peak forecast?

11 A. Well again, there is some material
12 that we have supplied, and I could endeavour to find it
13 for you. But the business of asking customers for peak
14 goes back a long way. It seems to have started from
15 the perception that customers were better able to
16 provide projections of peak than they were of energy,
17 that they had a better sense of their own peaks than
18 energy.

19 I think that may be because they were
20 being so -- certainly, at the time that it started, I
21 think would have been the early '60s, or may be even
22 earlier, that the demand charges were a very
23 significant portion of their charge, and that weight
24 has gone down over time, but the practice has
25 continued, partly because people have gotten used to

1 supplying peak forecasts.

2 There seems to have been some analysis
3 done in the '60s to confirm that that was a reasonable
4 approach and that, at the local level, peak was a more
5 meaningful concept to the local forecasters.

6 I would agree with you, when we start to
7 bring economic data to bear on forecasting load, it
8 makes more sense to apply it to energy, and that's why,
9 in fact, we do it that way when we are looking at the
10 total system. This is a system that has been in
11 existence for a long time and it seems to have worked
12 well, and no one has seen it necessary to change.

13 Q. In terms of your answer to this
14 point, I gather that there wouldn't be any economic
15 analysis beyond the end of the short-term forecast, as
16 far as these tables are concerned?

17 A. I think what I was suggesting is that
18 there is not economic data, of the sort that we are
19 using in the total system forecast, available at the
20 area office level or at the customer level. We do not
21 have good measures of income at some of these areas.
22 And also, it is probably the case that whatever
23 indicators are available are very volatile at the local
24 level.

25 People are looking at housing starts in a

1 particular municipal utility, there may be, all of a
2 sudden, 1,000 units in the next year to nothing, and so
3 on. It is very much more difficult to do the sort
4 of -- certainly, econometric style forecasting.

5 I think we will be exploring with the
6 individual customers, particularly the municipal
7 utilities, whether they are able to do what amounts to
8 end-use forecasting for their own municipal utility,
9 but that certainly has not been the practice up to now.

10 The forecast has been prepared
11 considering a range of information that people very
12 familiar with the operation of that municipal utility
13 have available to them, but I wouldn't say it is as
14 systematic an approach as one is constrained to, if one
15 adopts an end-use framework.

16 MRS. MACKESY: Okay. I just want to
17 break the cross-examination at this point and ask - and
18 I am not sure whether I would I should be asking the
19 Chairman or Mr. Campbell this - if I wanted to request
20 an energy forecast such as I spoke of, at 5-year
21 intervals, actual use backwards from 1990, and forecast
22 from 1990 onwards, should I do that now, or could I
23 think about it and request it later?

24 MR. B. CAMPBELL: I am quite content
25 either way. If you would like some time to consider

1 whether you can use the information and then request
2 it, I won't turn down the request. I think Mr. Burke
3 has made it clear that that information, although it
4 may not be readily available by 5-year intervals - as I
5 understood it from his answer - the same kind of tables
6 are available for energy at least out to '94, and he
7 thinks, possibly, beyond. And that being so, should
8 you request it, we will be happy to deal with it.

9 MRS. MACKESY: Q. Mr. Burke, is it
10 easier to do it year-by-year this way, or at 5-year
11 intervals?

12 MR. BURKE: A. If you would like it in
13 5-year intervals, that's no problem.

14 Q. I only chose five years because I
15 thought it would cover less paper.

16 A. We can give it to you both ways, if
17 you like.

18 Q. Okay, fine. Thank you. I would like
19 to leave it then, so I can think about it and get back
20 to Mr. Campbell on that.

21 A. I do want to emphasize the point that
22 Mr. Campbell did. I cannot be sure, beyond the long
23 term, we have the energy numbers. It could be that for
24 transmission and planning purposes, it's the peak that
25 they are interested in and we do not supply them with

1 energy. I do not know.

2 Q. Now, my next question relates as well
3 to Interrogatory 1.29.3, which is the first
4 interrogatory in the smaller package, and it also
5 relates to Exhibit 3, page 3-25.

6 Now, on page 3-25 in column 2, towards
7 the bottom, about line 30, it reads:

8 "In the urban areas of Southern
9 Ontario where the reliance on air
10 conditioning is the highest, the annual
11 peak load occurs during the hottest parts
12 of the summer."

13 Now, does that mean that the peak load
14 for some of the operating areas in the forecast tables
15 in 1.29.1, could be higher than the January peak shown
16 here, if a summer month were considered?

17 A. Yes, I think that's correct. That
18 there are -- well, I think it is of the order of eight
19 municipal utilities. I don't know how it works out
20 exactly on the area offices.

21
22
23
24 ...
25

1 [11:03 a.m.] Q. Could you provide a list of the
2 municipal utilities?

3 A. Yes, I think I could. I am just
4 thinking whether I actually have that list with me.
5 Well, I think it will take me a while to find it.

6 I can certainly provide you with a list
7 of municipal utilities for which the summer peak in
8 recent years has been higher than the winter peak?

9 Q. Good. That is what I would like.

10 A. All right. Do we have a few days for
11 that?

12 Q. Oh, yes. Of course. Now, the answer
13 in 1.29.3 refers to regions, so that is why it would be
14 different from what you have been telling me about the
15 municipal utilities.

16 My question was, "In which operating area
17 does the annual peak load occur during the summer," and
18 the reply was:

19 "Ontario Hydro has load data on a
20 regional basis for its regions as
21 traditionally defined, namely, Central,
22 Western, Eastern, Northeastern,
23 Northwestern and Georgian Bay. In none
24 of these regions does the annual peak
25 load occur during the summer. The

1 exception to this has been in Central and
2 Western Regions in 1990. This event
3 may be explained by the depressed demand
4 in December, rather than growth in summer
5 load. Hydro is not forecasting that any
6 region will become steadily summer
7 peaking in the next five to ten years."

8 A. Yes. And I think the point of
9 emphasizing at the beginning that the...

10 Okay. It seems that the answer was given
11 in terms of regions, and the point of emphasizing that
12 it is the old regional definition is that it may not be
13 the case with the new regional definition for Central.

14 Q. Yes?

15 A. That we would have to check because,
16 certainly, I think a fair proportion of the municipal
17 utilities that are summer peaking are in the Metro
18 Toronto area, so that if Central, as it is currently
19 defined, excludes -- is more focussed on the Metro
20 area, then it is possible.

21 I would have to check that, but
22 certainly, what is stated here is correct, that under
23 the old definition of Central, with the exception of
24 the year 1990, and as it points out - and that was
25 because we had a particularly warm December in 1990 --

1 Sorry; I take that back. It wasn't because it was
2 warm; it was because the economy was so depressed.

3 Q. Oh, okay.

4 A. In other words, we had a year which
5 didn't have its normal pattern; that is, you usually
6 expect that as the year proceeds, if we are going to
7 grow with 3 per cent in a year, that the December will
8 be higher than the January values.

9 But in this year, we actually had the
10 case that December was significantly lower than the
11 summer values. It had dropped about 5 or 6 per cent
12 from the summer to December, so in weather-corrected
13 terms, even more...

14 I'll leave it at that.

15 The year-over-year growth rates were 5 or
16 6 per cent below the previous year, by the time we got
17 to December of 1990, and so that left the summer
18 looking high. That is an unusual occurrence.

19 Q. How does that apply to the municipal
20 utilities having summer peak?

21 A. You mean, how does the particular
22 events in 1990 apply?

23 Q. Yes, yes. Or do they?

24 A. Well, the municipal utilities would
25 have had summer peaks in 1990 to a large extent, yes.

1 Q. For this reason, that --

2 A. For this reason. In looking at years
3 prior to 1990, though, where we have not run into this
4 situation, except because of weather fluctuations; that
5 is, there have been some years where the pattern of
6 weather in the year has caused extreme results - that
7 is, summer peaks that occur for one year and then you
8 don't see them again - it is...

9 Q. It is weather-related in those years?

10 A. It is a restricted list of municipal
11 utilities that are, now, you might say, on a fairly
12 regular basis going to be summer peaking.

13 Q. Because of weather?

14 A. No. Because of the nature of their
15 loads; that is, because of the air-conditioning loads
16 that they have versus the space heating loads that they
17 have. That is, under normal weather conditions - and
18 by "normal," I mean a 30-year average for weather
19 conditions--

20 Q. Oh, okay.

21 A. --you would expect that municipal
22 utility to be summer peaking, and I guess I would have
23 to say, under normal economic circumstances, where you
24 don't have a dive between the summer and the winter,
25 which is what happened in 1990.

1 Q. Now, if I were to add up the total
2 loads for all of the 50 operating areas for a
3 particular year, should I get an aggregate figure that
4 appears in the overall forecasts for Ontario, or if I
5 were to add up all these figures, are there likely to
6 be some differences between the basic forecast figure
7 as given in Exhibit 8?

8 A. Yes. There would be some
9 differences, even with the unallocated taken into
10 account. It has to do, I believe, with the coincidence
11 of these different times at which peak occurs.

12 Q. Oh.

13 A. And there are factors, and I believe
14 those are also discussed. No, actually, I am not sure
15 that they are discussed in the report we issued.

16 Q. Okay. But how large a difference do
17 you think there would be?

18 A. The coincidence aspect is one aspect.
19 Another aspect is that the customer peak is...

20 Some of the customer peaks refers to
21 their peaks in their locations and the basic load
22 forecast is at the generator, so that there is a
23 difference of transmission losses, as well.

24 Distribution losses are taken into
25 account by the municipal utilities in developing their

1 estimate, but the transmission loss from the generator
2 to the municipal utility is something that is included
3 in the basic load forecast, but not in the sum of these
4 peaks.

5 Q. Oh, okay.

6 A. I believe that taking diversity and
7 transmission losses into account makes a difference
8 of -- the transmission loss is about 4-1/2 per cent and
9 I believe the diversity issue may adjust things by --
10 it's certainly less than 2 or 3 per cent. That is my
11 understanding. But you won't get exactly the same
12 results by summing each of the individual customers.

13 Q. And when you say "peak coincidence,"
14 that is another term for "diversity," another way of
15 describing of "diversity"?

16 A. I think there is a mathematical
17 relationship between those two, yes.

18 Q. And "diversity" is defined in the
19 glossary--

20 A. yes.

21 Q. --in the load forecast exhibits,
22 okay. That reminds me of one -- when we are speaking
23 of the load at the generator, that reminds me of one
24 question I didn't ask.

25 The basic forecast and these forecasts

1 don't include the amount of energy that is consumed by
2 the operation of the generating stations? That would
3 be something separate?

4 A. That is right. The area office --
5 when you say "these," you mean the area office numbers?

6 Q. Yes, yes.

7 A. No. Those do not include the
8 internal use of electricity.

9 Q. And neither would your Ontario-wide
10 basic forecast?

11 A. That is correct.

12 Q. Okay. Now, you mentioned yesterday a
13 forecast supplied to transmission and system planning.
14 Is this the sort of forecast you were --

15 A. Pardon me?

16 Q. I believe yesterday you mentioned a
17 forecast supplied for transmission purposes and system
18 purposes. Is that what this is?

19 A. Yes. That is, in fact, what you
20 have.

21 Q. All right. And you mentioned a "lag"
22 yesterday. Is that what you were talking about, as far
23 as the time delay in compiling these?

24 A. That is right, because the process,
25 really, is one that is done after we finalize the

1 aggregate forecast. We go back then to perform this
2 allocation for the long-term; that is, beyond 1995, the
3 allocation is back to the individual customers.

4 Q. And what use do transmission systems
5 make of these types of forecasts? That's not your --

6 A. Best to talk to them.

7 Q. All right.

8 A. But it is one of their inputs for
9 tranmission planning purposes.

10 Q. Okay. Now, why would this sort of
11 information not be included in the DSP document? Can
12 you answer that?

13 A. Why would what sort of information?

14 Q. This type of information.

15 A. My understanding is that transmission
16 is not a major issue for this plan, but I am sure Mr.
17 Campbell will have -- partly because there is no
18 site-specific generation proposed in the plan. That is
19 my understanding.

20 Q. But the Board is being asked to
21 approve the rationale for transmission facilities?

22 THE CHAIRMAN: What is the question? I
23 am sorry; I am not quite sure I know what the question
24 is.

25 MRS. MACKESY: I was asking why this type

1 of information is --

2 THE CHAIRMAN: What type of information?

3 MRS. MACKESY: -- Interrogatory Response

4 1.29.1 is not included in the Demand/Supply Plan
5 Document?

6 THE CHAIRMAN: You mean the regional
7 breakdown of the forecast?

8 MRS. MACKESY: The operating area
9 breakdown, yes. And I believe Mr. Burke was saying it
10 is because transmission is not considered a major part
11 of this request?

12 MR. B. CAMPBELL: Yes. Beyond that, I
13 don't believe Mr. Burke can go. The approvals we are
14 requesting, Mr. Chairman, do not extend to inter-area
15 transmission; that is, those portions of the major
16 transmission system that constitute the backbone of the
17 transmission system.

18 We do, as you will be aware from the
19 documentation, want to be clear that one of the things
20 that one has to be aware of in planning major
21 generation is that it does have to be connected to that
22 backbone, that underlying bulk electricity system,
23 which is the inter-area transmission.

24 And so we have included, in ways that we
25 will deal with in later panels, some analysis of that,

1 but we are not asking for any approvals, nor is the
2 planning... Nor does the undertaking that is before
3 you relate to additions to the bulk transmission
4 system. I think to the extent that it affects
5 generation planning, it has been taken into account, as
6 you will see in later evidence.

7 We have also pointed out in the
8 documentation that there is planning expected to be
9 taking place with respect to certain aspects of the
10 underlying bulk electricity transmission system, but
11 that will be done through a somewhat separate process.

12 Of course, the additional item I should
13 mention is, of course, the Manitoba transmission, of
14 which the Board is aware.

15
16
17
18
19
20
21
22
23
24 ...
25

1 [11:17 a.m.] THE CHAIRMAN: Well, at some point in
2 this hearing we are going to be hearing evidence about
3 transmission lines and their effects on the ground and
4 on the people who live in the area, I take it?

5 MR. B. CAMPBELL: That is correct. In
6 the sense that we, of course, will want to explain to
7 you the effects associated with the radial transmission
8 that is required to incorporate any generation. We do
9 not believe those two -- let me put it another way.

10 We believe that when -- and we will show
11 you how, in the planning for generation, transmission
12 to connect that generation to the grid has to be taken
13 into account. There is, of course, as well, a portion
14 of the undertaking that relates to the requirement and
15 rationale for transmission from Manitoba. And we will
16 be dealing with those aspects, as well.

17 But the application does not extend to
18 additions to the inter-area transmission that is the
19 underlying sort of backbone of the bulk transmission
20 system in Ontario.

21 MRS. MACKESY: If it should come up that
22 some of the radial transmission that is being studied
23 has inter-area aspects, could this be pursued?

24 THE CHAIRMAN: I'm sorry; I didn't hear
25 that.

1 MRS. MACKESY: If it comes up that some
2 of the radial transmission that is being under
3 consideration at this hearing has inter-area aspects --

4 THE CHAIRMAN: Has what?

5 MRS. MACKESY: Has inter-area aspects--

6 THE CHAIRMAN: Yes.

7 MRS. MACKESY: --could, then, these
8 matters be pursued, as they arise?

9 MR. B. CAMPBELL: We are interested in
10 having relevant matters pursued. I will simply say,
11 without getting into the details of the kinds of
12 assumptions that were made to deal with this radial
13 transmission aspect, without getting into the details
14 of that, I will simply say that to the extent that a
15 proper examination requires considerations of that
16 type, then they are reflected in the material and will
17 therefore be before the Board. But I am very reluctant
18 to deal with this in sort of the abstract. I think it
19 has to be dealt with in particular circumstances.

20 THE CHAIRMAN: Well, the situation is
21 this: That the forecast put into the DSP was put
22 forward in order for this Board to consider the
23 balancing of the needs of demand and supply.

24 I recognize that the focus of your
25 interest is the location of the facilities and

1 transmission lines, and that may be something we have
2 to deal with at some point. But all that Mr. Burke can
3 tell you is that the reason they didn't include this
4 particular data in the DSP was because that was not the
5 main thrust of what the DSP document was. However,
6 they have, as you can appreciate, provided that
7 information that--

8 MRS. MACKESY: And I am very grateful for
9 that.

10 THE CHAIRMAN: --is now part of this
11 hearing.

12 So perhaps you can go on to your next
13 general area.

14 MRS. MACKESY: Q. Is electricity demand
15 concentrated in the urban areas?

16 MR. BURKE: A. Yes.

17 Q. Can you give me any idea of what
18 percentage of electricity demand in Ontario would be of
19 an urban...

20 A. Well, I mean the simplest way -- if
21 we make the assumption that the municipal utilities
22 generally serve urban areas, then the municipal
23 utilities serve about 70 per cent of Ontario's load,
24 and the direct industrial customers are about another
25 15 per cent - I am not guaranteeing these numbers to

1 the precise percentage point - and the rural retail
2 system is about 15 per cent. I don't know where the
3 direct industrials are all located; whether they are
4 all in what you would call urban areas or not, but
5 nonetheless, certainly, the rural is clearly the retail
6 system, and it is about 15 per cent.

7 Q. Thank you. Now I have some questions
8 about interrogatories not yet mentioned.

9 And turning first to 1.29.6, which is on
10 the back of 1.29.3, and the question was, "Does the
11 forecast for BNPD's operating area in the requested
12 table include power required for new facilities at
13 BNPD?" And the reply was, "No new facilities are
14 included in the forecast."

15 I take it from that that no new
16 generating facilities are included in the forecast?

17 A. I think that's true as well, but I
18 think we interpreted your question more to refer to
19 facilities like heavy water plants and so on.

20 Q. Okay.

21 A. But certainly, we were not making any
22 judgments about the location of new generating stations
23 at all.

24 Q. And for the basic overall forecast
25 for Ontario, you are not including generating plants,

1 because the basic forecast doesn't take into account
2 the operation of the power consumed or generated?

3 A. The power that is used for internal
4 purposes is not part of the basic load forecasts.
5 However, I do believe that the power used in the heavy
6 water plants is taken into account and that is one of
7 the facilities in the Bruce Nuclear plant area, and
8 that is why it is in separately, whereas we don't have
9 anything for the other stations.

10 Q. You say it is in separately. What do
11 you mean by that?

12 A. For instance, as you point out, there
13 is -- I believe the Bruce Nuclear Power Development was
14 treated as a customer in some sense --
15 ---Discussion off the record.

16 MR. BURKE: Yes, the heavy water plants
17 in our accounting framework.

18 MRS. MACKESY: Q. Oh, okay.

19 Now I won't --

20 MR. BURKE: A. Just to be clear then.
21 But none of the power consumed internally in generating
22 stations --

23 Q. Which can be considerable.

24 A. Pardon me?

25 Q. Which can be considerable.

1 A. Well, it is not something I know of,
2 I have to admit.

3 None of those are included. And that's
4 why we don't have something for Pickering or anything
5 else.

6 Q. Now, with regard to transmission
7 losses then, transmission losses are included in the
8 basic forecast?

9 A. That's correct.

10 Q. I am speaking here, now, of the
11 overall basic, not of this particular table, in 1.29.1.

12 And in successive years of the forecast,
13 the transmission losses increase.

14 A. I believe that the percentage is
15 fairly fixed.

16 Q. The percentage is fairly fixed, but
17 the absolute amount --

18 A. Increases with the amount of energy
19 transmitted, yes.

20 Q. And that increase is based on the
21 amount of energy that you are working with, not on
22 whether or not you are adding new lines in the
23 forecast?

24 A. For instance, in the very short term,
25 there is actually a decrease in losses associated with

1 the fact that we are bringing into service a new line
2 from Bruce to London, I believe. And that has the
3 effect of reducing transmission distances for some
4 loads and, therefore, there is a small reduction in the
5 losses.

6 But beyond that, we have no -- at least
7 the people who provide us with that forecast are not
8 assuming any major transmission system changes which
9 will affect the percentage of losses.

10 Q. So you don't do the forecasting for
11 losses yourself; you get those figures from somebody
12 else?

13 A. Yes. You would have to be an expert
14 on the transmission system to estimate whether losses
15 would change over time.

16 Q. Now, going on, then, to
17 Interrogatories 1.29.8 and 1.29.9. It's the second
18 page of the smaller packet, second sheet of the smaller
19 packet. 1.29.9 is on the back of 1.29.8.

20 And this is based on information that I
21 was given on visits to Ontario Hydro information
22 centres.

23 Could you confirm that the above-average
24 growth areas are in the locations mentioned: the
25 Golden Horseshoe, the Ottawa area, and the pockets of

1 Northern Ontario, with the addition of the
2 Kingston-Perth area?

3 A. Yes.

4 Q. And on 1.29.9, I asked for what,
5 specifically, was meant by some of these areas. And
6 the Golden Horseshoe and the Ottawa area were
7 explained. I am not sure about the pockets of Northern
8 Ontario. The reply tells me where Northern Ontario is
9 in Hydro's estimation, but it doesn't mention where the
10 pockets are. Do you have any idea?

11 A. I must admit the person you were
12 talking to in the information centre -- I mean, I think
13 it depends how small the pocket you are talking about.
14 I think there are particular facilities that are going
15 in in northeast and particularly the northwest region.

16 Q. Can you describe some of those
17 facilities, or say where they are?

18 A. Well, our west system forecast, which
19 corresponds to the Northwest system, there are
20 particular industries in the west system. I would say,
21 in general, the whole west system, on average, grows
22 slightly above the average for the system as a whole;
23 and with the growth concentrated industrial in the pulp
24 and paper and chemicals industries, the mining industry
25 is not above average. And the municipal and retail

1 system is growing at about 3.4 per cent for the period,
2 but that municipal system in the North may include the
3 effects of growth in the pulp and paper industry; that
4 is, within the municipal boundaries there may be
5 double-counting between what I said about the pulp and
6 paper industry and the municipal utilities.

7 Q. And the last Interrogatory 1.29.10.
8 The question was, "Why is there a need for increased
9 electricity supplies in those places?" And the
10 response was, "It is anticipated that stronger growth
11 in population of economic activity in these areas will
12 continue." Can you confirm that?

13 A. Yes.

14 Q. Now, that's the end of my questions
15 for Mr. Burke. I have one for Mr. Rothman.

16 THE CHAIRMAN: Did you say you have one
17 more question?

18 MRS. MACKESY: I have one more question
19 and a closing comment.

20 THE CHAIRMAN: I am not sure about the
21 closing comment --

22 MRS. MACKESY: It is very short.

23 THE CHAIRMAN: Perhaps we will have the
24 question of Mr. Rothman.

25 MRS. MACKESY: Q. Mr. Rothman, this is

1 regarding transcript Volume 10, page 1622. And I
2 believe there that you said that the success of the
3 Blue Box program isn't as directly related to consumer
4 self-interest as stopping smoking or using seat belts.
5 This is 1622.

6 MR. ROTHMAN: A. Yes.

7 Q. So the question is: However, though,
8 do people have a direct self-interest in using the Blue
9 Box program because it is becoming more difficult to
10 find willing host areas for landfill, and people don't
11 want their garbage to pile up permanently on their own
12 property or in the neighbourhood parks?

13
14
15
16
17
18
19
20
21
22
23
24 ...
25

1 [11:33 a.m.] A. As I was commenting yesterday, these
2 kinds of programs are things in which an individual's
3 action can have relatively little impact on the overall
4 total. So that whether or not my particular household
5 does or does not recycle its newspapers or bottles or
6 cans, or compost its kitchen waste, won't have a
7 significant impact on the total going in to landfills.
8 If all households do that, however, there can be a
9 significant impact.

10 So, this is a case where my self-interest
11 says it costs me some extra time and attention to do
12 those things, and there is no direct benefit to me, no
13 measurable direct benefit to me, in terms of my income
14 or my access to goods and services that can come from
15 that behaviour. There is a measurable net benefit to
16 the society as a whole, if all consumers engaged in
17 that behaviour.

18 So I was saying that, at least within
19 some range, there is some evidence that consumers are
20 willing to undertake behaviour that's not in their
21 direct self-interest, in order to benefit the society
22 as a whole; but in the aggregate, we haven't seen
23 evidence yet that suggests there are major changes in
24 that direction.

25 And the kind of most obvious one single

1 indication of that that I talked about was what has
2 happened with automobile fuel efficiency. There again,
3 for one consumer to buy or not to buy a fuel-efficient
4 car won't have a significant impact on the total of
5 emissions from the cars; won't have a significant
6 impact on the total of fossil fuels used; whereas, if
7 consumers collectively bought more fuel-efficient cars,
8 they could have a significant impact.

9 What we have seen over the last few years
10 has been that the average fuel efficiency of new cars
11 has been going down. It's been going down, not because
12 the car manufacturers aren't offering fuel-efficient
13 cars, but because consumers, given lower gasoline
14 prices, have been choosing to buy less fuel-efficient
15 cars, for reasons of their comfort, or their desire for
16 more powerful engines, or whatever.

17 So what I am seeing is, in some areas, in
18 some ways, there has been some change by consumers to
19 engage in activities that are not directly in their own
20 self-interest, but which would be in the community
21 interest, yet in most of the aggregates that we can
22 see, most of the empirical evidence that we can see,
23 suggests that there hasn't been a change of consumer
24 behaviour in that direction.

25 That's why we expect that, if there is to

1 be such a change, it will come partly, as we will be
2 discussing in Panel 4, through incentives in the
3 electricity area, and partly through regulations like
4 standards, again, in the electricity area.

5 Q. I want to go back to the question of
6 consumer self-interest. Isn't it in the user of the
7 Blue Box's self-interest to do something about reducing
8 garbage, so they don't have to deal with it themselves
9 directly on their own property?

10 That may not be economic in the way your
11 are speaking of it, but it still could be a direct
12 interest to reduce the amount of garbage going into
13 their local landfill, because their local landfill is
14 filling up.

15 A. Yes, but they don't pay for that
16 directly, or at least their contribution to that cost
17 is minimal.

18 Q. Through taxes, is that what you are
19 speaking of?

20 A. Yes. My taxes won't change
21 significantly, if at all, if I do or don't recycle and
22 compost. If I, individually, do or don't recycle and
23 compost, I can't see that I can have a measurable
24 effect on my own taxes. I would like all of my
25 neighbours to do that, because if all of them

1 collectively do that, they can lower my taxes.

2 Q. Then do people have a direct interest
3 in the communal response?

4 THE CHAIRMAN: I think this argument
5 could go on for some time. I think you have to accept
6 Mr. Rothman's view of it, and you may have a different
7 one, as to why people do what they do.

8 So that completes your questions?

9 MRS. MACKESY: May I just ask? I was
10 asking whether the direct interest of a person may --
11 whether people may have a direct interest in the
12 communal interest. May I ask that question as a final
13 question?

14 THE CHAIRMAN: Sure.

15 MR. ROTHMAN: They may well.

16 What's happening here is we are defining
17 direct interest in a different way.

18 MRS. MACKESY: Yes.

19 MR. ROTHMAN: I am defining direct
20 interest in a very narrow sense, of a rational economic
21 decision-maker, someone who looks at his or her own
22 behaviour and makes a calculation of what the direct
23 impact of that behaviour is to them.

24 We know people aren't all rational,
25 narrowly-defined, self-interested decision-makers like

1 that, and that's essentially what we are agreeing, that
2 we can observe behaviour like recycling that isn't
3 accounted for by that narrowly-defined rational
4 self-interest. And the only question is, that we can
5 agree that such behaviour occurs. People vote also;
6 it's the same kind of calculus.

7 MRS. MACKESY: Q. You have mentioned
8 that we have different apprehension of direct interest.
9 We might also have a different apprehension of what is
10 rational, too.

11 MR. ROTHMAN: A. Yes. But I don't think
12 that we are differing on whether such behaviour occurs.
13 The question is, to what extent is that behaviour
14 likely to produce major changes in consumer behaviour,
15 changes in consumer behaviour at an aggregated enough
16 level for us to be able to see it?

17 What I am saying is that the evidence so
18 far, empirical evidence, and just looking at trends and
19 and anecdotally suggests that it has not yet happened.

20 MRS. MACKESY: I will take your say in
21 that.

22 Thanks, Mr. Chairman. My closing
23 comment, is very short.

24 THE CHAIRMAN: Well, I know it's very
25 short, and I don't want to be difficult, but closing

1 comments are not part of the process.

2 MRS. MACKESY: Maybe I am using the wrong
3 term then. I asked some interrogatories regarding
4 agricultural electricity use, and I haven't placed any
5 questions on them, any questions on the interrogatories
6 or on the cross-examination or the evidence-in-chief,
7 on agricultural issues that have been mentioned at
8 this hearing so far.

9 THE CHAIRMAN: But you want them on the
10 record?

11 MRS. MACKESY: Not necessarily.

12 The reason I am not asking questions is
13 because I can't represent my brother's viewpoint
14 adequately on that, but he is a participant and might
15 like to address some of those issues in a submission.

16 THE CHAIRMAN: You will certainly have an
17 opportunity to make submissions. I am not cutting you
18 off that, it is just this isn't the right time to do
19 that.

20 MRS. MACKESY: No, no, I wasn't intending
21 to do that. My closing comment of this panel was just
22 that comment.

23 THE CHAIRMAN: All right. That is fine.

24 MRS. MACKESY: Thank you very much for
25 your patience.

1 THE CHAIRMAN: Just before we leave, I
2 want to make sure how we are going from here.

3 Pollution Probe, are you going to ask
4 some questions?

5 MR. KLIPPENSTEIN: Yes, I have a few,
6 very short questions.

7 THE CHAIRMAN: All right. And Canadian
8 Voice of Women, Ms. Spoel?

9 MS. SPOEL: Yes, we will be
10 cross-examining, again, quite briefly.

11 THE CHAIRMAN: And the government, Ms.
12 Couban.

13 And Mr. Hunter, whose counsel is not
14 here, but he is going to be asking questions.

15 Is there anybody else?

16 MR. D. POCH: Mr. Chairman, I was just
17 going to ask a few questions.

18 THE CHAIRMAN: Yes, you are next, Mr.
19 Poch, I forgot. I'm sorry.

20 Anybody else?

21 Mr. Watson, you will be wanting to maybe
22 do a re-examination and that may cause some
23 controversy; is that right?

24 MR. WATSON: I understand that that may
25 be the situation. When would you like to have that

1 controversy?

2 THE CHAIRMAN: I never want to have it,
3 but maybe you and Mr. Campbell, if you can't settle it
4 at the break, we will have to deal with it afterwards.

5 THE REGISTRAR: This hearing will recess
6 for fifteen minutes.

7 ---Recess at 11:40 a.m.

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

...

1 ---On resuming at 12:03 p.m.

2 THE REGISTRAR: This hearing is again in
3 session. Please be seated.

4 THE CHAIRMAN: Mr. Poch.

5 MR. D. POCH: Thank you, Mr. Chairman.

6 On a separate matter, I have placed with
7 the Clerk a copy of an interrogatory response we
8 received today from the government, pertaining to
9 standards in place, standards being worked on and areas
10 of possible standards.

11 I do not propose to question these
12 witnesses about it. They have just gotten it today, as
13 well. I have spoken to Mr. Campbell. It may be that
14 there are no questions arising out of this, but we
15 believe that if there are, they can be dealt with in
16 Panel 4 and Mr. Burke will be back then. But I felt
17 that you should have it now, because it clearly
18 pertained to the matters we have been discussing.

19 THE CHAIRMAN: Thank you.

20 RE-CROSS EXAMINATION BY MR. D. POCH:

21 Q. Mr. Burke, with respect to the
22 bandwidth and the revision thereof, first of all, do I
23 understand correctly that because the electricity
24 intensity GDP is forecast to go from roughly 1 to .85
25 over the forecast period, that the wider bandwidth you

1 have provided us with for load would translate into a
2 relatively wider change to the GDP bandwidth?

3 MR. BURKE: A. That is correct. I gave
4 the amount of that on Monday. I said it was about .3
5 per cent wider on either side than it had been
6 previously.

7 Q. All right. Now, in answer to a
8 number of concerns I raised with you, or discussed with
9 you, with respect to such matters as the using of the
10 standard deviation of population to project GDP
11 bandwidth, and the matters that IPPSO raised with
12 respect to both the formula and similar matters to the
13 scaling, I take it your position has been that you are
14 comfortable because, in fact, you have scaled the
15 population technique to reflect the views of the 15
16 economists and your own level of what a reasonable
17 bandwidth is. And in essence, that population
18 technique, whatever our concerns with it, it is just a
19 tool which you are calibrating to what you believe is
20 reasonable anyway?

21 A. I think that is a fair assessment.

22 Q. All right. That being so, can you
23 explain how this error that was made with respect to
24 the bandwidth got past the comparison at least with the
25 batch of 15 economists?

1 A. The 15 economists, the survey results
2 go to 2010. We asked them for growth to 2000 and
3 growth to 2010, but I think that, even if one assumes
4 that there wouldn't be much differentiation between
5 2010 and 2015, in terms of what the growth rate is, one
6 ends up in a situation where the growth rate to 2015 is
7 pretty well in line with what the survey indicated the
8 growth rate would be.

9 But prior to 2010, in fact, the results
10 that we have provided for the GDP band are more. They
11 exceed what the survey suggested by ranges from
12 three-tenths to 1 per cent in some years.

13 So, effectively, the shape of the
14 distribution generated by the population equation is
15 one that exceeded the survey until about 2009, but
16 then, in fact, between 2009 and 2015, converges very
17 rapidly to what the survey indicated. And I think it
18 is only consistent that we maintain, effectively, the
19 pad that we had above making the GDP band wider than
20 the survey beyond 2009. There is no reason for it to
21 suddenly converge on, essentially, the survey results.

22 It, in the process, of course, violated
23 some principles about whether the GDP band itself
24 should contract in absolute terms, and I guess what I
25 am saying in a nutshell is that, if you examine it at

1 the endpoint, I am not sure we have violated the survey
2 result.

3 The fact is that if you looked at it on
4 the way, the relativity of our model-generated band to
5 the survey changes from something which is wider than
6 the survey to something which is pretty well exactly
7 what the survey suggested.

8 Q. All right. So, simply put, the
9 survey just didn't go beyond 2010, the period that you
10 have just adjusted? I heard what you said--

11 A. That is right.

12 Q. --and I am not disagreeing with you.
13 I am just saying, but more fundamentally, you didn't
14 have anything to compare to?

15 A. That is true, although I think it
16 would be reasonable, if I was making such a comparison,
17 to extend at the same growth rates another five years.

18 I am not sure that people can really
19 differentiate all that well, if you are asking their
20 opinions, between a 20-year and 25-year growth rate.

21 Q. Fair enough. Did you take your
22 bandwidth prior to the adjustment, and fly it by the
23 other external group you used; that is, the load
24 forecast external advisory group?

25 Just to be clear, the 15 we spoke of were

1 economists that are external economics people, as it
2 were, primarily, and you have a different group which
3 specifically looks at load forecast?

4 A. Yes.

5 Q. And did this bandwidth approach and
6 result, was it vetted by them?

7 A. Are you asking about the load
8 bandwidth now, as opposed to the GDP bandwidth?

9 Q. The load bandwidth, including how it
10 was derived.

11 A. Okay. The load bandwidth was
12 presented to the External Load Forecast Advisory
13 Committee, but I would have to say that the methodology
14 was not discussed in great detail on those occasions.
15 The results were, and the pattern of the results were,
16 and we also, I believe, asked for estimates of a load
17 bandwidth, but that, you know, people's judgmental
18 sense of what an 80 per cent load bandwidth would be.
19 There we found very few of the people who participate
20 in our External Load Forecast Advisory Committee, who
21 were prepared to actually express a view on
22 electricity's load bandwidth. I think we had five or
23 six observations to work with.

24 Q. Did they give reasons for not
25 offering a bandwidth?

1 A. They didn't feel qualified to--

2 Q. All right.

3 A. --or able to assess the bandwidth for
4 electricity demand that far in the future. Actually, I
5 don't think I have got a list of reasons. That is my
6 presumption.

7 Q. All right. So then, I take it from
8 that, that there is more comfort in forecasting a
9 bandwidth for GDP than there is for electricity--

10 A. Well--

11 Q. --generally, in the forecasting --

12 A. --there is certainly a much wider
13 community of people who profess to forecast GDP,
14 although the group that really is interested in Ontario
15 GDP in the long term is clearly a fairly small group.
16 But certainly, people feel more able to express their
17 views about GDP growth for Ontario, presuming it is not
18 going to be too far different from Canada and so on,
19 than they do about something as specific as the demand
20 forecast for a specific commodity like electricity.

21 Q. How many people do you have on your
22 load forecast advisory group?

23 A. I think it is about a dozen.

24 Q. All right. Fine then. You have
25 chosen to use a constant per cent, post 2009?

1 A. Yes.

2 Q. Can you tell us if there is any
3 methodology that you have relied on to do that?

4 A. Well, I think that in the context of
5 the methodology we have, between 2004 and 2009, the
6 bandwidth is constant. It varies very little from the
7 plus or minus 20 per cent. And essentially, the
8 standard errors beyond 2009 for population, and
9 combining that with the way we scaled it, have had the
10 effect of narrowing the band beyond that. The pressure
11 has been downward.

12 My sense is simply to return to reject,
13 effectively, both the scaling which tends to tighten
14 the band. That is because our demographic forecast
15 between 2010 and 2015 goes down, the growth rate goes
16 down, about 10 per cent. It goes from 1.1 to 1.0 per
17 cent in that five-year block, so there is a contraction
18 that is brought in by the way we have scaled, and also,
19 the empirical result.

20 Essentially, I am rejecting those results
21 as valid and overriding them with the judgment that we
22 should return to the constant value that pertained from
23 2004 on. And essentially, what is being said there, is
24 the broader judgment that you reach a point in time,
25 maybe 10 or 15 years in the future, where one cannot

1 with confidence say that uncertainty is getting wider
2 and wider; we have effectively reached a maximum value
3 for an uncertainty measure about load, and it is
4 reasonable to keep it at that level.

5 I don't believe it is reasonable for it
6 to contract, but I don't believe that there is any
7 basis necessarily to conclude that uncertainty keeps on
8 widening. If the methodology had the effect of, after
9 five or six years of being constant, actually driving
10 it down, I reject that, and override that with
11 judgment.

12 And I would hope to, effectively, come up
13 with a scaling factor for GDP next time that seems less
14 arbitrary than this, because this certainly has been an
15 on-the-stand correction to an inadequacy in the
16 bandwidth that became apparent to me in the course of
17 this exercise.

18 Q. You are saying the way you will
19 incorporate this in subsequent forecasts is to put
20 another term or change the scaling term, and you just
21 have not done that yet?

22 A. Yes. I hope to come up with a way of
23 scaling that seems a lot less arbitrary than this one.

24 Q. You have just said that you are not
25 prepared to accept that uncertainty narrows, and hence

1 your correction. But you are also not prepared to
2 assume that uncertainty broadens, that the uncertainty
3 bandwidth broadens as we go farther out.

4 A. Yes. I think that cyclical factors
5 and so on tend to dampen out after 10 or 15 years, and
6 one gets to a point where - and I think the data is
7 indicating that, both when you look at population and
8 when you look at GDP, which as I have said, is even
9 narrower when you look at its longer term averages and
10 so on; that is, the standard deviations get smaller and
11 smaller - that there is a point in time at which one
12 captures the randomness element of the load forecast
13 and it doesn't get any wider beyond that.

14 Q. Let me just ask you, then: There are
15 uncertainties that are captured or not, that arise in
16 the translation between population and GDP uncertainty
17 and load uncertainty, and you have spoken about some of
18 them.

19 A. Yes.

20 Q. Wouldn't you expect that those kinds
21 of uncertainties, the shape of the GDP, the technology,
22 the lifestyle questions, regulatory constraints, all of
23 these many, many topics we have spoken of; wouldn't you
24 expect that the effect of any of those that you haven't
25 forecast, the difference that they would create between

1 reality and your forecast would naturally amplify with
2 time?

3 A. Well, we have it amplifying in
4 absolute terms. It is a constant percentage that we
5 are dealing with here, but apart from that, given that
6 I am essentially required to come up with a
7 quantitative estimate, as opposed to just my judgment,
8 and set some numbers sort of arbitrarily, the
9 coefficients in this equation estimated over historical
10 period have a certain variability and the residual term
11 has a certain variability and that doesn't change as we
12 go out in time.

13 That is, what the methodology -- what
14 using an occasion to infer load forecast uncertainty
15 entails is that the uncertainty in the relationship
16 between GDP and load is captured by the uncertainty in
17 the parameters and the uncertainty in the residual
18 term. And that is a static estimate, that is a
19 one-shot estimate. And it is an inference from the
20 past about the future, and I cannot do better than that
21 quantitatively.

22 Q. So, just to wrap up that point then,
23 what you are saying is, there is no way to quantify; it
24 is just too unknown to quantify whether there will be
25 new types of uncertainty or whether these uncertainties

1 will expand. The best you can do is do what you have
2 got quantification for?

3 A. I will agree with that.

4 Q. All right. The change in your
5 bandwidth that you have now made, does it -- well,
6 perhaps we can approach it this way.

7 Mr. Shepherd provided a list at the end
8 of his exhibits that he provided, which had some 20-odd
9 headings for uncertainty categories, as he categorized
10 it, and I heard your comments that you would categorize
11 it differently, and you explained that some of these
12 were captured and some of these weren't.

13
14
15
16
17
18
19
20
21
22
23
24 ...
25

1 [12:17 p.m.] The change in your bandwidth, it doesn't
2 change that result, does it? There are still certain
3 types of uncertainties which are captured by your
4 methodologies and certain that are not?

5 A. No, I would say that the revision
6 that we have now, I think I can clearly say, reflects
7 the intent of the bandwidth that we had all along.

8 And I think Mr. Chairman asked me, would
9 I have done this this way had I realized what had
10 happened in preparing the 1990 load forecast? And
11 that's correct.

12 There is nothing about this revision that
13 makes it methodologically different. I am not claiming
14 any increased coverage of uncertainties because of it.
15 It is the same as before. It just was an unacceptable
16 deviation beyond 2009.

17 Q. And finally, I take it, just in terms
18 of those uncertainties which you don't purport to
19 capture in your uncertainty analysis, some of them
20 could be, at least - we can't know - related to some of
21 the uncertainties you have captured, and would bear
22 some relationship to those uncertainties you have
23 captured.

24 That is, if, in fact, load deviates from
25 your forecast, in a given direction, for a given

1 reason, that may well be automatically correlated with
2 a change due to one of these other uncertainties, in
3 that the uncertainties are linked, and some of these
4 would be quite unrelated and would simply add. Do you
5 understand my question?

6 A. I don't think I could say I do.

7 Are you talking about degree here, the
8 issue of are certain environmental trends captured but
9 radical changes aren't? Is that what we are getting
10 at?

11 Q. No, I am suggesting you have
12 indicated there are certain categories of uncertainty
13 which you can't model, and there are certain categories
14 that you do model.

15 A. Yes.

16 Q. And I am suggesting to you that some
17 of the uncertainties that you can't model ultimately
18 may be additions; that is, the uncertainties you do
19 model may take you to the edge of your bandwidth, for
20 example; reality may unfold and it is at the 10 per
21 cent or whatever, point.

22 A. Yes.

23 Q. And that some of these uncertainties
24 that you can't model would then, could then indeed take
25 it further. They could add to the difference between

1 reality and your forecast.

2 A. But I think that is, in part,
3 captured by a point that came up on Monday with Mr.
4 Shepherd, that, really, this gets to the confidence
5 level of the bandwidth. We are dealing with an 80 per
6 cent bandwidth here and that allows for quite a few
7 things to happen outside it, of the sort that you are
8 talking about: These things that seem to be low
9 probability today, but could make quite a difference
10 down the road.

11 Just to put some quantitative element on
12 this. An 80 per cent bandwidth, if it is normally
13 distributed, would be 1.3 standard deviations from the
14 median; whereas, if you want a 95 per cent bandwidth,
15 you would go two standard deviations from the median.

16 And I think, if I remember rightly, a 99
17 per cent confidence limit, you could be three standard
18 deviations from the median. You could have bandwidths
19 that are two or three times as wide as the one we have
20 before us, if you are prepared to say that you are
21 planning for 95 and 99 per cent confidence that you
22 have captured all the outcomes.

23 Q. Mr. Burke, this is perhaps a very
24 fundamental point then. When you say 80 per cent
25 confidence, that is, you have 80 per cent confidence

1 that the reality will come between those two points,
2 given the uncertainties which you have modelled? It is
3 those uncertainties that have generated that 80 per
4 cent bandwidth?

5 A. It is my best quantitative estimate
6 of uncertainty.

7 Q. Yes.

8 A. But I can't say what I have captured
9 and not captured by the modelling process in advance.

10 Q. Mr. Burke, you would agree that some
11 of the items you have modelled may go in one direction
12 and some of these uncertainties you can't model may go
13 in the other direction, and there could be offsets?

14 A. Yes.

15 Q. And would you also agree that some of
16 the uncertainties in your model may go in a given
17 direction and that that result may be exacerbated by
18 some of these uncertainties you haven't captured? You
19 can't model pushing reality even further from the load,
20 and we can't know now how it's going to turn out.

21 A. I think you are dealing with a level
22 of certainty here. Clearly, there is a chance -- and
23 we are not talking about how we get there; we are
24 talking about where we get to. We are talking about
25 what is the chance that load could have a negative

1 average growth rate of 25 years as opposed to at the 80
2 per cent level, 1.7 or so per cent or 2 per cent,
3 whatever the number is.

4 And there are many ways to get to that
5 result. And I don't know that we can say, before the
6 fact or even after the fact, all that clearly, whether
7 these were things that we should have been able to
8 capture with the model, and so, clearly, the procedure
9 was wrong. Or these were things that the model
10 couldn't have hoped to capture and, therefore, it's
11 okay, because these are fundamental trends. I mean, in
12 practice, the band is going to be judged: Did it
13 capture the load or didn't it, for whatever reason
14 and --

15 Q. I understand that, Mr. Burke. I am
16 not asking how we'll judge you, and whether we will
17 place a value on your service, what value we will place
18 on your service once reality arrives. I am simply
19 saying, in generating the bandwidth, you have gotten
20 that far, that wide, because you have taken into
21 account certain types of uncertainty and you can only
22 do that for the ones that you have modelled?

23 A. Yes. And they are the broad
24 classes --

25 Q. That you have spoken about.

1 A. Yes.

2 Q. I don't want to make you repeat all
3 your evidence. And all I am suggesting to you is that
4 there are other uncertainties. And your widening of
5 the bandwidth doesn't capture any more of these in
6 terms of the methodology--

7 A. No.

8 Q. --that could take us, in fact,
9 farther still. And you haven't modelled those, and you
10 can't tell us about it?

11 A. There are certain kinds of changes
12 that are not modellable and so, yes, I cannot say that
13 I -- it is certainly not a function of the change that
14 I have made from 2009 on.

15 MR. D. POCH: Thank you.

16 Thank you, Mr. Chairman, for this
17 opportunity.

18 THE CHAIRMAN: Thank you, Mr. Poch.

19 Pollution Probe.

20 MR. KLIPPENSTEIN: Thank you, Mr.

21 Chairman. I would only echo Mr. Poch's comments about
22 the response to an interrogatory received today
23 regarding the Energy Efficiency Act. I don't think I
24 have any questions about it but I haven't had a chance
25 to examine it, and if I do, Mr. Poch may well be able

1 to cover those.

2 CROSS-EXAMINATION BY MR. KLIPPENSTEIN:

3 Q. I would like to address the attention
4 of the panel very briefly to the subject of
5 environmental regulation, and particularly to a topic
6 raised, I guess, in-chief of Mr. Rothman by Mr.
7 Campbell. That is the question of environmental
8 regulation. This may be obvious, but I would just like
9 it clarified.

10 Mr. Rothman, can you confirm that the
11 forecast takes into account the effect of future
12 government environmental regulation which is not yet in
13 effect? To some degree?

14 MR. ROTHMAN: A. To some degree, yes.

15 Q. If I could then raise to your
16 attention one comment you made at that point in the
17 discussion. And if I may refer to the transcript, it
18 is just one sentence that I would like to put to you.
19 And for your reference, it occurs at Volume 2 of the
20 transcript on page 313, on line 17. I will read it out.
21 It's very short.

22 You say "So the risk to the --

23 A. Sorry, which page did you say?

24 THE CHAIRMAN: Perhaps if you read it out
25 to me, I needn't turn up. Do you want to read it out?

1 MR. KLIPPENSTEIN: Yes, I will read it
2 out, and you many not find it necessary to refer to it.
3 It is on page 313.

4 Q. In answering the question, you state:

5 "So the risk to the forecast would be
6 that of future environmental regulations
7 that constitute a significant break from
8 the past trend."

9 If I could ask you about the Energy
10 Efficiency Act, may I take it that you would consider
11 that Act to be part of the trend rather than a
12 significant break?

13 MR. ROTHMAN: A. I was talking here
14 about regulations that would affect aggregate GDP
15 growth through affecting productivity, and I was really
16 thinking more along the lines of the kinds of
17 regulations that I was discussing yesterday. I think
18 it was yesterday.

19 The impact of the Energy Efficiency Act,
20 I think, is more directly felt in the load forecast
21 than on the aggregate GDP forecast; that is, I am not
22 very familiar with the Act, but it seems primarily to
23 regulate in specific areas that are not the kinds of
24 regulations that will reduce productivity
25 significantly. They are not the kinds of emissions

1 cleanup regulations that are likely to produce large
2 amounts of capital, that have little measured impact on
3 the GDP, that contribute little additional to the
4 measured GDP.

5 MR. KLIPPENSTEIN: All right. That's
6 helpful. Thank you. Those are all my questions.

7 THE CHAIRMAN: Thank you.

8 The Voice of Women for Peace, Ms. Spoel.

9 MS. SPOEL: Thank you, Mr. Chairman.

10 I intend to refer briefly in my
11 cross-examination to two exhibits that have already
12 been filed. They are Exhibit 100, which are the
13 overheads that were used by the panel in their direct
14 evidence, and perhaps to Exhibit 108, which was filed
15 by Mr. Poch in cross-examination. It's the samples of
16 load-building efforts in the 1940s, 50s and 60s.

17 I will not be referring to any
18 interrogatories.

19 CROSS-EXAMINATION BY MS. SPOEL:

20 Q. The first area that I would like to
21 draw the panel's attention to is the extent to which
22 you take a government policy into account in your
23 forecasting activities.

24 And if I can summarize, perhaps, your
25 evidence-in-chief, I think it was Mr. Burke who stated

1 that, to the extent you know what the government policy
2 is, you take it into account in forecasting, but you
3 don't try to anticipate it beyond that. Would that be
4 a fair statement?

5 MR. BURKE: A. Well, actually, I think I
6 said things that we can reasonably anticipate, we do
7 take into account.

8 But what I really meant there was we have
9 to have something very specific, and there are some of
10 the standards, for instance, that we have taken into
11 account that are not yet official government policy,
12 they have not been regulated yet.

13 But because we know that they are coming
14 through the pipeline and we have a fairly good sense
15 from the stage they are at in their approval process
16 that they are likely to come about, that is an example
17 of something that we can reasonably anticipate and
18 build into the load forecast.

19 But then there are, if you take the
20 example of standards one step further, there are
21 standards that we have only heard people talk vaguely
22 about. Whether they will -- sorry, but areas where
23 they will have standards at all, that crosses the line
24 as far as we are concerned. We don't know how to
25 incorporate that in the load forecast at this point.

1 Q. I think you are right; that was your
2 evidence.

3 And is it fair to say that you would take
4 those government policies, or the effects of those
5 policies, into account, whether they would be to
6 promote the use of electricity for certain purposes, or
7 to discourage its use?

8 A. Yes.

9 Q. And I think it was also your
10 evidence-in-chief that you did not consider that it was
11 Ontario Hydro's role to make policy about whether
12 electricity should be used for any particular purpose
13 or should not, and that, essentially, while you would
14 encourage - the example you gave was refrigerators, I
15 believe - you would encourage or have standards for
16 efficient uses, you wouldn't tell people whether they
17 could buy a larger or a smaller refrigerator; is that
18 correct?

19 A. I think I gave that as an example of
20 a policy that would be required, or could be required,
21 to achieve some target level of demand in future, and
22 that we should be careful in agreeing to targets that
23 we have assessed the sorts of policies, and whether
24 they are acceptable to us, that are required to move to
25 a target.

1 I think that was the context in which I
2 brought that example up; that Ontario Hydro's own
3 approach to efficiency improvement programs has been to
4 provide the same level of energy service but with
5 greater efficiency. We haven't yet developed programs
6 to change the level of energy service that people would
7 demand of us.

8 And that's a big issue and is one for
9 which some consideration, definitely by government,
10 should be made because it does get the government into
11 a whole new area of regulation.

12 Q. Now I wonder, Mr. Burke, when in Mr.
13 Poch's cross-examination, he went through in some
14 detail the activities of Ontario Hydro in the past to
15 promote, if I might use that word, the use of
16 electricity for space heating, I wondered whether there
17 was any government policy, as opposed to Hydro policy,
18 that you are aware of, to undertake that promotion in
19 the 1950s and early 1960s?

20 A. I am not aware of the government
21 policy. I can think of several concerns the government
22 might have that could have led to such a policy. But I
23 would infer from the fact that the government did not
24 stop the advertising over a long period of time, that
25 they concurred with the actions of Ontario Hydro.

1 Q. But you are not aware of a policy
2 before Hydro undertook that activity to --

3 A. I am not aware of one, but I do know
4 that there have been periods when the government has
5 felt it important that Ontario have as much indigenous
6 energy supply as possible, and there may have been some
7 sort of feeling that electricity was a more indigenous
8 energy source than natural gas or oil. I don't know,
9 though; I really can't say. I can only presume that,
10 having persisted for such a long time, the government
11 could not claim to have not been aware of Hydro's
12 actions, and they had ample opportunity to tell Hydro
13 to cease and desist, which is well within the
14 government's role.

15 Q. I understand, also, from the material
16 that was filed in Exhibit 108, that up until the late
17 1950s, there was a rate structure by Hydro to actively
18 discourage the use of electricity for space heating
19 purposes; is that correct?
20
21
22
23
24
25

...

1 [12:35 p.m.] A. Yes.

2 Q. And are you aware whether there was
3 any government, as opposed to Hydro, policy that
4 brought that rate structure into place in the first
5 place?

6 A. You are asking me whether it was a
7 Hydro policy?

8 Q. I was asking you whether you were
9 aware of whether it was a Hydro policy, Hydro acting on
10 its own accord, or whether it was an Ontario government
11 policy?

12 A. My sense is, and this --

13 Q. I can tell you that I don't know the
14 answer to that question, so perhaps you may not.

15 A. I have to say, I would only speculate
16 that it is a result of the system configuration at the
17 time, that because of its dependence on hydraulic
18 resources until the 1950s, when, for the first time,
19 fossil stations were introduced for peaking purposes,
20 it was not advantageous to Hydro to have loads that
21 peaked in winter, and, really, had a limited use in the
22 wintertime. And there may have been a concern that was
23 reflected in costs that led to the rate structure at
24 that point.

25 I think in 1951, Ontario Hydro brought in

1 its first thermal stations, which, maybe their cost
2 structures were such that the rate that had been in
3 place up to that point was no longer as appropriate.
4 But this is just, I have to say, my speculation.

5 I might add that I think there is one
6 major event that happened in the late '50s which caused
7 a reconsideration, as I understand it, of the approach
8 to space heating, and that was the connection of
9 Ontario to the TransCanada pipeline in 1959, and that
10 made gas available for the first time in Ontario and
11 changed the energy market at that stage.

12 Q. As a result of that stage, Hydro
13 decided to encourage people to use electricity rather
14 than gas, which had just become available? Is that
15 your evidence?

16 A. It coincides in terms of time, and
17 the source, I don't know whether it was government
18 policy or Hydro policy at that time.

19 Q. Now, the other area that I would like
20 to address the panel's attention to is the use of
21 electricity versus natural gas, specifically for
22 space-heating purposes, but other uses as well.

23 I wonder in your forecast whether you
24 have considered the alternative impacts of the
25 natural -- if the natural gas that is projected to be

1 used as a source of fossil-fuel generation to generate
2 electricity, as one of the options of the Demand/Supply
3 Plan, were used as a direct application, for example,
4 for space heating or industrial purposes, what impact
5 that would have on your forecast? Is that something
6 you have looked into?

7 A. No. And I think it's easier said
8 than done, though, in the sense that some of the cases
9 where we are projecting the use of electricity, natural
10 gas is probably not going to be available; that is, a
11 pipeline system will not exist for those customers. So
12 that one would have to examine whether or not it was
13 feasible to make that shift.

14 Q. To the extent that it is feasible,
15 have you made any of those calculations?

16 A. No. We have, I think, supplied
17 evidence which is sort of in the other direction, what
18 would happen if we didn't supply electric space heating
19 load incrementally in the future. I think those
20 numbers are on the record. But we haven't gone the
21 other way, what electric space heating load could you
22 displace if you took the natural gas in the plans and
23 substituted it for electric space heating.

24 My understanding, I guess there is one,
25 Plan 15, and then the other plans have different

1 amounts of gas. So the results would depend very much
2 on which plan as well.

3 Q. If I might then turn to the issue of
4 the natural gas, and, for this purpose, perhaps we
5 could refer to Exhibit 100.

6 Chart 8 of Exhibit 100 is the various
7 coloured overheads that were used in the
8 examination-in-chief. Charts 8 and 9 deal with,
9 specifically, a space heating fuel shares and as a
10 percentage of residential electricity consumption. I
11 would like to deal with those first.

12 On Chart 8, am I correct in understanding
13 that the percentages given are the percentages of the
14 overall electricity use, and have not necessarily any
15 relation to aggregate numbers at the times we are
16 dealing with?

17 DR. BUJA-BIJUNAS: A. Yes, the 21 per
18 cent for space heating refers to 21 per cent of
19 residential electricity consumption goes to space
20 heating.

21 Q. Could you tell me what the actual,
22 that 21 per cent, would be in terawatthours?

23 A. Yes. Just give me half a second.

24 Q. Sure.

25 A. Space heating consumption is 8.4

1 terawatthours, out of a total residential consumption
2 of 40.9 terawatthours.

3 Q. Then, in the year 2015, do you have
4 the numbers for that, as well?

5 A. Yes. Space heating is 12.3
6 terawatthours, out of a total residential consumption
7 of 60.7 terawatthours. That is in Exhibit No. 16, page
8 16.

9 Q. Thank you. And it was your evidence,
10 I believe, that the projected marginal share of new
11 residential construction that would use space heating
12 would increase from its current 32 per cent to 38 per
13 cent?

14 A. That's correct, yes.

15 Q. Now, can you tell me what percentage
16 of the new construction you anticipate will be, or you
17 are projecting will be, in areas that are actually
18 served by natural gas?

19 A. We are assuming current natural gas
20 availability, which means, currently, about 75 per cent
21 of households across the province have natural gas
22 available to them as a space heating option. And we
23 are assuming that in the future that will continue to
24 be the case.

25 Q. Would that also be the case for new

1 households?

2 A. Basically correct, yes.

3 Q. So you are assuming that construction
4 will take place --

5 A. At the same ratio, basically, yes.

6 Because, in actual fact, if you look at space heating
7 fuel choice, it certainly differs between rural areas
8 and urban areas, because gas availability is different
9 in rural versus urban areas. If we were to have a
10 higher growth rate in rural areas versus urban areas,
11 where there is less gas availability, that would have
12 an impact on the electrical fuel share.

13 In essence, what we are saying is that
14 future construction will mirror current construction,
15 in terms of that ratio of rural versus urban
16 development.

17 Q. Now, Mr. Burke, was it your evidence
18 this morning to one of Mrs. Mackesy's questions that
19 you anticipated that more growth would occur in urban
20 areas than rural areas in terms of electricity
21 consumption?

22 MR. BURKE: A. No. She asked me what
23 the share was and I said that the share was 15 per cent
24 rural, 70 per cent municipal and 15 per cent directs.

25 Q. I thought it was also your evidence

1 that you anticipated that most of the growth in load
2 would occur in urban areas; is that correct? I may
3 have missed --

4 A. Yes, you're right. That the growth
5 would be faster in the urban areas.

6 Q. But you have not taken that into
7 account -- for the purpose of these projections you
8 have assumed that only 75 per cent of new households
9 will have gas, natural gas, available to them; is that
10 correct?

11 DR. BUJA-BIJUNAS: A. That's correct,
12 yes.

13 MR. BURKE: A. But it's total growth
14 that's the same. It doesn't necessarily mean that
15 households grow in urban areas and rural areas --
16 sorry, that household growth in urban areas is faster
17 than rural.

18 In fact, it might be the opposite. It's
19 load growth in total that will be faster in urban areas
20 than in rural areas. It could be office buildings,
21 industry, that could be what is growing faster.

22 Q. Have you done those projections to
23 compare what the load growth -- how much will be --

24 A. No, we do not have a spatial forecast
25 by sector. Wait a minute, except to the extent that we

1 have the rural retail system versus the -- in fact, all
2 the growth, pretty well all the growth in the rural
3 system is through household growth. I mean, it is a
4 residential system primarily, and it is the residential
5 sector that is growing much more slowly than the
6 average.

7 I think we have got long-term residential
8 growth at 1.6 percentage for basic and the 2.3 for the
9 average of load. So that it's quite consistent with
10 the idea that the rural system would be growing more
11 slowly, but it doesn't allow you to infer anything
12 about the relativity of where households will be; that
13 is, whether more households will be added in urban
14 areas than in rural.

15 If fact, I would just intuitively expect
16 that areas that we are calling rural today will have
17 faster growth for residential than urban areas. After
18 all, they are filling up. There is a matter of
19 definition here, of what is urban today and what is
20 rural tomorrow, that sort of thing.

21 Q. I expect, Dr. Buja-Bijunas, that this
22 will be probably one of your questions.

23 If you were to assume that the 75 per
24 cent -- that only the 25 per cent of households or new
25 households that didn't have natural gas available to

1 them were to use electricity for space heating, have
2 you done any estimates of what impact that would have
3 on the space heating fuel shares that are shown on page
4 9 of this document, and conversely, also on the
5 percentages that you have shown on page 8?

6 DR. BUJA-BIJUNAS: A. I am not sure I
7 have your question right.

8 Q. I'm sorry, let me rephrase it.

9 You have projected that the marginal
10 share of electricity for space heating in residential
11 rural will increase to 38 per cent.

12 A. That's correct.

13 Q. My question is, if you were to assume
14 that it would only go to the 25, that the marginal rate
15 would only be used by the 25 per cent who don't have
16 access to natural gas, assuming that that 25/75 split
17 is correct, what impact would that have on the
18 percentages that you have shown on page 8 of this
19 document, or have you considered that question?

20 A. We haven't directly considered that
21 question. We have done some sensitivity analyses,
22 looking at the impact of maintaining current fuel
23 shares for electricity out into the future, looking at
24 the impact of all new construction, making fuel choice
25 decisions similar to urban and rural areas that

1 currently have extremely high gas availability.

2 So, if all new construction behaved like
3 central region, which is an urban area where gas
4 availability is 85 percentage, and all rural
5 construction behaved like western region where the gas
6 availability is 81 per cent, what, then, would be the
7 impact on the load forecast?

8 So, in essence, that's saying, in the
9 future, if we don't maintain 75 per cent gas
10 availability, but had a much higher gas availability,
11 what would the net impact then be on the load forecast?
12 How much less would electricity's fuel share be in that
13 scenario?

14 Q. I am asking you a slightly different
15 question, I think, although I would be interested to
16 know what the answers were to that scenario.

17 My question was: If you kept the gas
18 availability the same or, for that matter, increased it
19 to the ratios you have just described, but everybody
20 who was building a new house or apartment used gas
21 where it was available--

22 A. That's right.

23 Q. --what impact would that have? And
24 what's the change in your marginal share of use for new
25 construction. That's the question that I am asking and

1 I am wondering whether you have done any of those
2 calculations?

3 A. If it's of any use to you, we have
4 provided the amount of future space heating going to
5 new construction, new electric space heating. So that
6 would give an indication that if that were taken up by
7 natural gas or whatever, that would give the --

8 Q. Where would we find those numbers?

9 MR. BURKE: A. We will have to search.
10 It was an interrogatory response to somebody.

11 Q. I am sure it was.

12 THE CHAIRMAN: Wouldn't that also be
13 subject to availability of natural gas?

14 DR. BUJA-BIJUNAS: This is just a
15 scenario.

16 MS. SPOEL: My question, the scenario was
17 if natural gas was available to 75 per cent.

18 THE CHAIRMAN: What you are giving them
19 now, would that take into account availability?

20 DR. BUJA-BIJUNAS: Actually, it would be
21 a step further, basically saying that -- it gives and
22 indication of absolute size. If all new that was
23 coming on line used gas instead of electricity, what
24 would the net impact be. So you have got sort of a
25 boundary or a bound on the total.

1 MR. BURKE: Essentially, what she can do,
2 she has got the effect of no electricity for space
3 heating, and 38 per cent of the margin and the 25 per
4 cent of the value will be 25/38ths of the value that's
5 provided in the interrogatory, you can figure it out
6 for any natural gas availability.

7 MS. SPOEL: Q. Thank you. That brings
8 me to another question, however, and that is of your 38
9 per cent anticipated marginal share, what percentage of
10 that is in areas which actually have natural gas
11 available to them? I assume that it is not a breakdown
12 of everybody in one area and only a few where natural
13 gas is available. Is that a reasonable statement?

14 DR. BUJA-BIJUNAS: A. I don't have any
15 figures of what my forecast is in terms of specifically
16 how much is in areas where gas is available and how much
17 is not where gas is available. This is just an
18 aggregate province-wide gas availability.

19 What I do is, in assessing what fuel
20 shares make some sort of sense for the forecast, I have
21 looked at current regional breakdowns to see what was
22 happening there, currently. But the forecast is in the
23 aggregate fuel availability.

24 Q. Are those figures in an exhibit or an
25 interrogatory, or is that something you have --

1 A. Fuel availability by region?

2 Q. Yes.

3 A. Yes. And 1.10...

4 Q. You don't have to give it to me; you
5 can check.

6 A. I think it is 1.10.77, but I would
7 have to look it up.

8 MR. B. CAMPBELL: We will get both of
9 those interrogatory numbers over the lunch break.

10 MS. SPOEL: Thank you.

11 Q. Now, if I might, page 12 of Exhibit
12 100 is fuel shares for space heating for offices. And
13 I note a steadily declining share for natural gas and a
14 steadily inclining share for electricity over the
15 period.

16 Have you done any estimates of the new
17 office construction that is in areas that are served by
18 natural gas?

19

20

21

22

23

24

...

25

1 [12:55 p.m.] DR. BUJA-BIJUNAS: A. Basically, most
2 commercial construction is in urban areas. Office
3 construction; for example, Ottawa, Toronto, Central
4 Region, have a much larger percentage of commercial
5 construction compared to the rest of the province, and
6 these areas are areas of high gas availability, so that
7 for the office sector, gas availability does not play
8 as much of an issue as it would for the residential
9 sector. So, we looked at that somewhat, but we do not
10 consider that to be as important a consideration for
11 offices as it would be for the residential sector.

12 Q. Now, if there were, for reasons
13 beyond the control of Hydro, let's say, by a government
14 policy or regulation, this new office or commercial
15 construction and office construction were heated and/or
16 cooled with natural gas, have you estimated what impact
17 that would have on these fuel shares that are shown on
18 page 12?

19 A. We haven't estimated the impact, but
20 we have noted that there are a lot of considerations
21 that make electricity an attractive option for offices.
22 A lot of those considerations have to do with
23 individual metering, individual control, the
24 attractiveness of heat pumps to provide cooling, which
25 is really quite a necessity in offices these days, as

1 well as heating.

2 The fact that a lot of contractors like
3 to put in electrical heating because they can piggyback
4 on all the other electrical supplies when the
5 construction is going in; there are a lot of issues
6 like that, that make electricity quite attractive to
7 builders.

8 Q. That was not my question. My
9 question --

10 A. No. But I meant because that, even
11 if gas were available, I think there are things about
12 electricity that pushes electricity as the fuel
13 preference in space heating for offices.

14 Q. But my question was, apart from
15 that - I understand your views about the preference and
16 I don't intend to comment on those - my question was,
17 have you estimated, if the preferences changed for
18 whatever reasons, perhaps by regulation or legislation
19 even or other reasons, have you estimated what impact
20 that would have on these shares?

21 A. No, we have not.

22 MS. SPOEL: Those are all the questions I
23 have. Thank you.

24 THE CHAIRMAN: Thank you very much. Then
25 we will adjourn until two-thirty.

1 MR. MARK: Mr. Chairman, just before we
2 rise for the break, I am not sure what the schedule is
3 for the day. I have got varying reports as time has
4 progressed, and I know that there is an issue that Mr.
5 Campbell is going to speak to, about my right of
6 re cross-examination on certain areas. I am just
7 wondering what schedule you have in mind.

8 THE CHAIRMAN: Well, I think the first we
9 are going to do is we are going to take the lunch
10 break. After that, Mr. Hunter will be here - is that
11 right? - and he would be the next one, logically, and
12 then Ms. Couban, and then...

13 But I am not quite sure I understand the
14 issue. What is the problem here?

15 MR. MARK: Well, I can only tell you what
16 Mr. Campbell has told me. I mean, I have --

17 THE CHAIRMAN: You want to re-examine, as
18 I take it. Is that right?

19 MR. MARK: That is right.

20 THE CHAIRMAN: On what issue?

21 MR. MARK: Under cross-examination by Mr.
22 Shepherd, I believe, Mr. Burke gave an answer which I
23 think in express terms changed an answer he had given
24 when I was cross-examining.

25 THE CHAIRMAN: What was that?

1 MR. MARK: That was on the question of
2 the uncertainty and the GDP and the load growth.

3 THE CHAIRMAN: You say it is directly
4 contradictory?

5 MR. B. CAMPBELL: Yes.

6 MR. MARK: Yes, no question.

7 MR. B. CAMPBELL: I don't think there is
8 any dispute between my friend and me on that issue. It
9 is certainly -- the issue, if I could -- rather than
10 have my friend paraphrase it, if I could deal with it
11 directly. The issue is that Mr. Burke wanted to make
12 this correction at page 311 of the transcript,
13 wherein --

14 THE CHAIRMAN: Oh. I remember now. It
15 is coming back to me, yes, and he had a chance to do it
16 in Mr. Shepherd's cross-examination. Yes, I remember,
17 and did it.

18 MR. B. CAMPBELL: That's right.

19 THE CHAIRMAN: I think you have to live
20 with it.

21 MR. MARK: Well --

22 MR. B. CAMPBELL: That is my point
23 exactly. The issue with my friend is that, having
24 known explicitly that Mr. Burke wanted to make a
25 correction on this precise matter, which is what the

1 transcript indicates at the time of the discussion with
2 my friend, my friend declined the opportunity. And I
3 do not think the fact that the matter was subsequently
4 dealt with in the later cross-examination re-opens his
5 election for him on this matter.

6 MR. MARK: I am prepared to address that.

7 THE CHAIRMAN: All right. Perhaps this
8 would be a good time to do that.

9 MR. MARK: All right.

10 Firstly, this all proceeds on the
11 assumption, it seems to me, that when Mr. Burke wanted
12 to go back to this area, that we knew then what he was
13 going to say.

14 THE CHAIRMAN: Well, as I recall it - let
15 me just see if I have the scenario right - Mr. Burke
16 said he wanted to explain and qualify his remarks from
17 the previous day. I said he didn't have to do that
18 unless you were agreeable to that and you said, no, you
19 were not agreeable to that, and so the examination
20 continued.

21 MR. MARK: And your ruling, Mr. Chairman,
22 was that the answer stands. That was your ruling.

23 THE CHAIRMAN: Well, I do not want to
24 take it that he wasn't permitted to elaborate on an
25 answer he made the previous day.

1 MR. MARK: Whether it is an elaboration
2 or something else, I think is a matter of semantics.
3 But you indicated that, without the consent of counsel,
4 witnesses were not going to be allowed to go back and
5 revisit areas that were dealt with in
6 cross-examination.

7 THE CHAIRMAN: Well, I don't think it
8 went that far, Mr. Mark. I mean, if the question is
9 then asked by another cross-examiner, certainly he can
10 answer it.

11 MR. MARK: No. What Mr. Burke did was --

12 THE CHAIRMAN: In fact, Mr. Campbell
13 could ask it in reply.

14 MR. MARK: Well, but let's be fair, Mr.
15 Chairman. The only reason Mr. Campbell would ever know
16 to ask that question in reply is because Mr. Burke has
17 done something which, with respect, I think is outside
18 of the ground rules, which is go to his counsel during
19 cross-examination.

20 MR. B. CAMPBELL: No, no.

21 THE CHAIRMAN: No, no. He doesn't have
22 to do that.

23 MR. B. CAMPBELL: That is not what
24 happened, Mr. Chairman. I deny that emphatically, that
25 we have been very, very careful about this.

1 THE CHAIRMAN: Yes.

2 MR. B. CAMPBELL: And that is not what
3 happened. I have told the witnesses that they are free
4 to come to me and advise me if they wish to make a
5 correction. I knew nothing - and I know nothing when
6 they come to me - about the scope of that correction.

7 THE CHAIRMAN: That is what you said at
8 the time.

9 MR. MARK: I appreciate that, Mr.
10 Chairman, and the ground rules we have had here - and
11 we had this discussion with when this issue first came
12 up -if there are references to exhibit numbers, to page
13 numbers, to where witnesses said, "Offhand, I think the
14 number is, but I would have to go back and look," that
15 is fair game.

16 My view, for one, is that what is not
17 fair game, at all, is, during cross-examination, for
18 one of the witnesses to go to counsel and say, "You
19 know what? On reflection, I think when I was being
20 cross-examined, I was pushed into saying something that
21 I shouldn't have said."

22 Now, that is just not the way, as I
23 understand our system, it works. You, Mr. Chairman, I
24 think, in recognition of that --

25 THE CHAIRMAN: But whether he goes to

1 counsel or not is irrelevant. Supposing he thinks that
2 he wants to correct it?

3 MR. MARK: If he thinks that and wants to
4 correct it, and then as I understand your ruling, I
5 didn't ask for anything else, I think your ruling was
6 that, because of this system we have, it would be
7 unfair to permit that to happen and counsel has a right
8 to say, "I don't want to revisit this area."

9 Now what Mr. Burke has done here, as I
10 have read the transcript -- Mr. Shepherd, on dealing
11 with this area in a slightly different respect, but I
12 think Mr. Burke was talking about his more recent
13 adjustments to the bandwidth and Mr. Shepherd asked
14 him, "Does that solve the problem you found yourself in
15 under Mr. Mark's cross-examination?" Whereupon Mr.
16 Burke says, "No. That was something different," and
17 proceeded, being the smart and experienced witness he
18 is--

19 MR. B. CAMPBELL: Having been invited by
20 Mr. Shepherd.

21 MR. MARK: --to then go back over that
22 area.

23 Now, if I am in the situation where, Mr.
24 Chairman, if you are going to say that counsel has got
25 the right to control cross-examination, but then if the

1 witness is going to be permitted, because we have more
2 than one cross-examining counsel, to then get it in
3 otherwise, then I think we are in some difficulty.

4 THE CHAIRMAN: Well, that may be, but how
5 would you avoid that? What would you suggest? What
6 other alternative is there? If the question is a
7 proper answer to a question asked by Mr. Shepherd, he
8 is perfectly entitled to do that.

9 I think what I am prepared to let you do,
10 I do not want you to make a big deal out of the fact
11 that Mr. Burke said something which, on reflection, he
12 thought he shouldn't have said. If you want to ask any
13 questions that arise out of that, for clarification - I
14 hope they won't be many - I will let you do that, but I
15 don't think we ought to make a big deal out of the fact
16 on one day he said something and another day, he said
17 something else.

18 MR. MARK: Mr. Chairman, I do not want to
19 make a big deal out of that because we have to have a
20 procedure that works, but I think, in fairness, if the
21 witness under subsequent cross-examination is going to
22 say, whether he raised it initially or not, "At this
23 point, I think I should say that what I answered to
24 previous counsel was wrong," I just think in fairness,
25 the previous counsel has to have some opportunity to

1 deal with it. It is not --

2 THE CHAIRMAN: I haven't looked at the
3 transcript to see just exactly how it came up in Mr.
4 Shepherd's cross-examination, but...

5 MR. MARK: It is at page - Mr. Campbell
6 has it - 2124.

7 MR. B. CAMPBELL: Well, just a moment.
8 Mr. Chairman, my point on this is that I think, and I
9 advised my witnesses, that they have a positive
10 obligation to ensure that they think they have spoken
11 correctly.

12 Mr. Burke clearly felt he had said
13 something that was incorrect, brought it to the
14 attention of this Board, the Board made the ruling it
15 did, and my friend declined to explore it when
16 corrections had been made, such as the 2009 to 2005,
17 widening of the bandwidth of the judgmental adjustment
18 that Mr. Burke made. I had taken no objection to my
19 friend Mr. Poch, who had proceeded at that point,
20 exploring that matter with him, because it was a clear
21 matter that a correction was made and Mr. Poch might
22 well have asked different questions at the time.

23 My objection to my friend's approach is
24 that he was told there was a problem explicitly by Mr.
25 Burke and he said, "I don't care. I don't want to hear

1 about it," and he cannot then listen to everything else
2 for the rest of the time and decide, "Well, maybe I
3 should have asked something about it." He made his
4 choice.

5 THE CHAIRMAN: All right.

6 MR. MARK: I can just refer to the
7 transcript, Mr. Chairman, because your ruling, you
8 recall, was that the answer stands.

9 THE CHAIRMAN: Well, all right.
10 Something to that effect, yes.

11 MR. MARK: The answer stands. Now we get
12 to Mr. Shepherd's cross-examination and he was talking
13 about the upward adjustment of 7 per cent in the
14 forecast. This is at page 2123:

15 THE CHAIRMAN: What volume is this?

16 MR. MARK: This is Volume 12 of the
17 transcript and Mr. Shepherd is asking Mr. Burke about
18 that and Mr. Shepherd then continues, if you have it,
19 Mr. Chairman, page 2123:

20 "Let me go on to, I guess, what may be
21 a related point.

22 In your testimony on April 25th - I
23 won't give you the transcript reference
24 unless you ask for it; I think you will
25 remember - you were somewhat surprised

1 and dismayed at the MEA's revelation that
2 your load forecast bandwidth was narrower
3 than your GDP bandwidth. Is that now
4 solved by way.." [of] "...your correction
5 last Wednesday?"

6 Which was this other matter entirely.

7 Mr. Burke answers, "No." Then he volunteers:

8 "The relationship between the GDP
9 bandwidth and load..." width, I think
10 that was "...what I was dismayed about
11 was the premise that Mr. Mark felt he had
12 gotten me to agree to. What I agreed to
13 was..." et cetera.

14 Then he goes on to deal with my
15 questions, after having answered the question that
16 Shepherd asked, which was, "No. It is a different
17 issue." Then he proceeds to use the opportunity to go
18 right along and essentially say he was wrong when he
19 gave an answer to me.

20 THE CHAIRMAN: Well, the dilemma here is
21 difficult and perhaps I am as much responsible for the
22 problem as anybody.

23 If a witness in the course of the day,
24 for instance, Mr. Burke, says in the course of his
25 examination by Ms. Spoel, "Let me go back now. I

1 really want to explain an answer that I gave earlier
2 on," I would let them do it, even if anyone objected to
3 that.

4 What I do not want people doing is going
5 home at night, reading the transcript and trying to
6 rehabilitate what they have done -- said before.

7 MR. MARK: That was my concern.

8 THE CHAIRMAN: That shouldn't happen,
9 because if we do that, we will be here 10 years or 15
10 years. People will be doing it every morning as an
11 absolutely routine operation.

12 So I said to you, that is up to you.
13 Maybe I shouldn't have done that. Maybe I shouldn't
14 have let him do it, but I do not like that being done.

15 If it comes up and I am not satisfied,
16 just looking at this now, and perhaps it is because it
17 is in an area which is quite difficult and quite
18 technical that Mr. Burke is guilty of just seizing an
19 opportunity presented by Mr. Shepherd to go off onto
20 something completely different, but I am prepared to
21 let you ask questions about this.

22 But as I just say again, I do not think
23 that this is something that should be made a big, big
24 issue of the inconsistency.

25 MR. MARK: I am only making it an

1 issue -- it's only an issue of the inconsistency, Mr.
2 Chairman.

3 I don't suggest for a moment, really, any
4 impropriety on Mr. Burke's part. Mr. Burke has always
5 been, in my experience, a competent and honest witness;
6 I've got no quarrel with him.

23 ...

1 [1:12 p.m.] It's only raised because Mr. Campbell now
2 objects to it and, you know, for that reason the
3 inconsistency is raised. We are both content to treat
4 it on the basis he has, for whatever reason, now gone
5 and back and revisited it, squarely coming up with an
6 opposite answer to the question I asked. And I should
7 be entitled to some leeway that I don't think we have
8 to --

9 THE CHAIRMAN: I think, generally
10 speaking, out of context of this one, if in the course
11 of the numerous cross-examinations, something like this
12 comes up, that's a proper subject for re-examination.
13 We don't want a lot of it. We don't want it to be of a
14 nit-picking nature, but, generally speaking, that's
15 proper. So I am quite prepared to let you ask the
16 questions. I just don't want you to dwell on the --

17 MR. MARK: I won't at all, Mr. Chairman.

18 THE CHAIRMAN: Thank you.

19 I want you to to ask questions that will
20 elicit information, rather than to try and demonstrate
21 inconsistency.

22 MR. MARK: No, I have no intention of
23 doing the latter, I can assure you.

24 MR. B. CAMPBELL: Mr. Chairman, if I
25 could, just on that matter. In my submission, all of

1 this discussion illustrates, I think, absolutely
2 crystal clearly why it makes sense in hearings of this
3 type that when a witness feels he clearly has to
4 correct something -- I am not talking about the kind of
5 thing where you come in every morning and you try to
6 dot all of the i's and cross the t's, but that wasn't
7 the nature when Mr. Burke --

8 THE CHAIRMAN: We don't know. At least,
9 we didn't know at the time.

10 MR. B. CAMPBELL: My reading of the
11 transcript is that he started to explain that. He put
12 the problem in precisely that way.

13 In my submission, it is far preferable to
14 let the witness do it, deal with it at the time, rather
15 than get into this kind of situation at the end of the
16 day, because I think there is a prejudice if one --
17 there is this problem that you end up -- it encourages
18 this constant coming back over and over again. That's
19 why I said at the time that I thought it was preferable
20 to get these matters straight while my friend, Mr.
21 Mark, was still here. And let's deal with it properly,
22 and I urge that philosophy and practice upon the panel.

23 THE CHAIRMAN: We will adjourn for lunch.

24 THE REGISTRAR: This hearing will adjourn
25 until 2:30.

1 ---Luncheon recess at 1:15 p.m.

2 ---On resuming at 2:35 p.m.

3 THE REGISTRAR: Please come to order.

4 This hearing is again in session. Please be seated.

5 MR. MARK: Mr. Chairman, I have spoken to
6 the other people who have yet to cross-examine and
7 whatever.

8 I am only going to be about ten minutes,
9 and with leave of all concerned and subject to your
10 direction, they have agreed that I can have my say and
11 be on my way.

12 THE CHAIRMAN: All right. Is that
13 correct? We can only deal with that on a unanimous
14 consent. (Laughter).

15 MR. MARK: Thank you, Mr. Chairman.

16 RE-CROSS EXAMINATION BY MR. MARK

17 Q. Mr. Burke, as I understand the
18 correction you have made, do I have it right that
19 because you see the intensity of GDP to load growth,
20 that relationship declining to 0.85, you can
21 theoretically get a result where the uncertainty
22 associated with the load growth can be smaller than the
23 uncertainty associated with the GDP growth?

24 MR. BURKE: A. In per cent terms or
25 relative to the growth rates? That's correct. I am

1 not sure it's a correction; I just never got to say
2 that the first time round.

3 Q. And as I understand what you said to
4 Mr. Shepherd during your exchange with him, you see the
5 intensity at 0.85 at 2010 which was the year we were
6 talking about?

7 A. That's approximately correct. It
8 could be 0.83 but it's very close to 0.85.

9 Q. Do you have the MEA's Exhibit 102,
10 Mr. Burke, which was that collection of charts?

11 A. Yes.

12 Q. If you can turn up to page 5. Do you
13 have that?

14 A. Yes.

15 Q. And you will see these were the
16 ranges for uncertainty in the basic load contained in
17 your 90/12/10 forecast and the uncertainty range for
18 the GDP forecast which underlay that forecast?

19 A. Yes.

20 Q. And of course what we are concerned
21 with here, Mr. Burke, am I correct, is the average is
22 over that 20-year period.

23 A. Yes.

24 Q. And am I correct that in fact the
25 average intensity you see over that period is not 0.85

1 but rather 0.9.

2 A. What matters for estimating the
3 uncertainty band for a particular year is the intensity
4 in that year. Essentially, the equation is looking at
5 the translating a GDP value into a load value in 2010.

6 The uncertainty associated with growth
7 rates is one thing, but that is used to derive levels
8 for GDP, a range of levels for GDP in the year 2010,
9 and it is the intensity in the year 2010 that counts.
10 That is the way uncertainty in the year 2010 is
11 derived.

12 Q. But these numbers we have here, these
13 ranges, these are are not ranges in the terminal year.
14 These are the average ranges; correct?

15 A. That's right. That is the way we get
16 the levels in the year 2010. We use average growth
17 rates from today to 2010 and we convert those growth
18 rates into levels in the year 2010. The equation is
19 not translating growth rates into growth rates; it is
20 translating levels of GDP in 2010 to levels of load in
21 2010, and so the range of growth rates leads to a range
22 of levels in 2010 and they are converted at the
23 intensity appropriate for 2010.

24 Q. I appreciate that if we are looking
25 at the specific range at 2010, to be making similar

1 comparisons you would want to look at your range at
2 2010 and to do the analysis we have been talking about,
3 you would want to look at your intensity, your forecast
4 intensity at 2010. But these numbers, am I correct,
5 these are averages over the period. They don't
6 represent one point on the time line, be it 2010 or any
7 other?

8 A. No. But I guess I am not making
9 myself clear. Because in order to get a level in 2010,
10 you somehow have to get from 1990 to 2010.

11 Q. I appreciate that.

12 A. These growth rates, we could have put
13 the levels down if that -- but you chose to put growth
14 rates down. And the growth rate is just telling you
15 how you go from 1990 to 2010. And that is the
16 uncertainty that we are looking at -- there is the
17 uncertainty in the growth rate that ultimately
18 determines a range of values for GDP in the year 2010.

19 And now we are asking given that you have
20 got a range of values for the level of GDP in 2010,
21 what sort of load can you expect?

22 Q. But, Mr. Burke, you will appreciate
23 if you look at this - and we have discussed these
24 charts before - am I correct, and a simple answer will
25 do - these represent the average the ranges of the

1 average growth rates in both GDP over that 20-year
2 period; correct?

3 A. Yes, they do. But one of the --

4 Q. And the debate you and I were having
5 is whether it made sense or could be that the range of
6 the averages for GDP could be larger than the range for
7 your basic load growth? And that's now the matter that
8 you want to say upon reflection you think it is
9 possible. Do I have that correct?

10 A. Well, I said before that that is what
11 our methodology produced. At the time, I had explained
12 why the range for load would be wider than the range if
13 we simulated GDP alone because there was errors in the
14 coefficients and errors in the residuals that had to be
15 taken into account and we had agreed that that would
16 add something to the effects you would get if you
17 simulated GDP alone. What was never established was
18 that when you simulate GDP alone, you get something
19 which is less than -- a range which is less for load
20 than for GDP.

21 Q. I don't want to debate what was said
22 and what wasn't said. My question is really simple.
23 The debate we were having before was whether or not it
24 was possible, or it seemed intuitively reasonable, that
25 the range of the averages for GDP could be larger than

1 the range of the averages for basic load. Was that the
2 debate we were having?

3 A. I guess my problem with this is the
4 way I think of it is with the system we use, and the
5 system we use translates growth rates into levels and
6 then back into growth rates again. The determination
7 of uncertainty in any given year is something that is
8 done in level terms. That's what the equations uses
9 and so I have to think in that framework. It is not my
10 assessment of uncertainty in a particular year, really,
11 looking at the band in that year for load and the band
12 in that year for GDP and then I go back to the growth
13 rates if you want me to talk growth rates.

14 Q. You are not telling me that looking
15 at the averages over the 20-year period is not a
16 relevant thing to look at?

17 A. It is relevant but if you want to --
18 what I can tell you about what I would expect pertains
19 to the levels.

20 Q. I just want to establish what it is
21 we are talking about. I understand well, Mr. Burke,
22 why you say you want to give a fuller explanation of
23 why one can be larger than the other, whether it is
24 over the average in any given year, and I understand
25 that has to do with the intensity. If the intensity is

1 not one, a perfect one, then the uncertainty in one
2 will not change in direct correlation to the change in
3 the other. That's the point in a nutshell; is it not?

4 A. Yes.

5 Q. When we look at these averages, what
6 we see and what we all had some difficulty with until
7 this notion of there not being a one, a perfect one
8 relationship, was that it didn't seem right, that over
9 the 20-year period your average for GDP growth could
10 be, the range could be greater than your uncertainty
11 range for your average over that same period for basic
12 load; correct?

13 A. It didn't seem right to you.

14 Q. That's right. And while we were
15 sitting there, you had difficulty with it as well.

16 THE CHAIRMAN: Are we talking about a
17 difference between 2.0 per cent and 1.9 per cent; is
18 that what we are talking about?

19 MR. MARK: Yes.

20 MR. BURKE: I had difficulty with --

21 THE CHAIRMAN: And saying that is not
22 precisely one; is that what...

23 MR. MARK: No. If I can be permitted and
24 perhaps I will do this through Mr. Burke.

25 Q. My initial suggestion to you which I

1 suggest, Mr. Burke, you agreed to at the time was that
2 by necessity there had to be at least as much
3 uncertainty associated with your load growth as with
4 GDP, and I think that's where you feel you got into
5 some difficulty.

6 MR. BURKE: A. Because I was explaining
7 my perception of the relationship between those two and
8 I got halfway through, you asked me to distil something
9 and I agreed to that. But you then switched topics.

10 Q. I am going to give you the chance --

11 THE CHAIRMAN: I think this has gone on
12 very nicely, but I think we have got to stop it pretty
13 soon; you are both talking about different things.

14 MR. MARK: All right.

15 Q. Can we do it this way, Mr. Burke?

16 Do I have it correctly -- and I think,
17 Mr. Chairman, this will answer your question. Let's
18 take any given year--

19 MR. BURKE: A. Yes.

20 Q. --all right, if we want to put it on
21 your terms. The uncertainty associated with basic load
22 must be at least as great as the uncertainty associated
23 with GDP if the intensity is one?

24 ...

1 [2:45 p.m.] A. Yes, I agree to that.

2 Q. And your point, as I read your
3 exchange with Mr. Shepherd is that because your
4 forecasting in 2010, that the intensity will in fact be
5 going down to .85, for, let's say, a one per cent
6 change in GDP you will only get a .85 per cent change
7 in your load, therefore the uncertainty is
8 proportionately smaller?

9 A. It effectively shrinks the
10 distribution.

11 MR. MARK: Mr. Chairman, I will indulge
12 you, does that indicate for you what the debate is?
13 You raised the question.

14 THE CHAIRMAN: You can ask your next
15 question.

16 MR. MARK: Very well.

17 Q. Will you agree with me on this, Mr.
18 Burke, that just looking at the averages, the average
19 intensity you are predicting over this same period is
20 in fact .9?

21 THE CHAIRMAN: Where do you get that?
22 That's where I got lost.

23 MR. MARK: That's your prediction.

24 THE CHAIRMAN: I am looking at this
25 chart, I am looking at, where do you get that?

1 MR. MARK: That is not a number which is
2 on the chart, but Mr. Burke's explanation was that his
3 answer to me was premised by their being a one
4 relationship. In fact, he says because of it is .85
5 then you may see one being smaller than the other.

6 Mr. Burke in his answer to Mr. Shepherd
7 specifically made reference, and he says on page 2124:

8 "...that by the time you get to 2010,
9 which is the point in future that all Mr.
10 Mark's cross-examination referred to, the
11 elasticity between GDP and load is 0.85
12 or so."

13 MR. BURKE: Yes.

14 MR. MARK: Q. That's the thrust of the
15 clarification?

16 MR. BURKE: A. Yes.

17 Q. And I am just saying, your average
18 over the period for which we did chart No. 5 is in fact
19 .9, although for the year 2010 it may be .85, the
20 average is .9?

21 A. Yes.

22 DR. CONNELL: Excuse me, Mr. Mark, you
23 are using "intensity" and "elasticity" as though they
24 are synonyms?

25 MR. MARK: No. I only used "elasticity"

1 because that was the word Mr. Burke used.

2 Q. And I think, Mr. Burke, will you
3 agree with me that the appropriate -- what do you
4 think, is "elasticity" is the appropriate word?

5 MR. BURKE: A. Well, for an equation
6 that doesn't have any variables other than GDP in it,
7 they are equivalent in this particular instance. But
8 in a broader context "intensity" is the correct term.

9 Q. That's right. The intensity in
10 summary is really the summary of all the various
11 elasticities when you have everything working?

12 A. Yes, it gives you the relationship
13 between load and GDP, however that is determined, if it
14 was prices that changed it or other variables.

15 Q. And in your uncertainty equation, to
16 be clear, the only variable you used was GDP?

17 A. Yes.

18 Q. So in this equation then we can
19 equate intensity and elasticity for all practical
20 purposes?

21 A. Yes.

22 Q. Now, if we take the .9 average, Mr.
23 Burke, and apply it to these --

24 THE CHAIRMAN: What is the .9 again?

25 MR. MARK: The .9 is the intensity, the

1 relationship between GDP and electricity consumption.

2 MR. B. CAMPBELL: With respect, Mr.
3 Chairman, hasn't the witness said that he -- I am
4 afraid we are all going to get confused. Hasn't the
5 witness said he does it on a year-by-year basis not on
6 these averages? And I am not sure whether we are
7 talking at cross-purposes here or not, but I thought I
8 heard Mr. Burke say he dealt with it on a year-by-year
9 basis and it would be answered on that basis.

10 THE CHAIRMAN: The .9 is the intensity of
11 what?

12 MR. MARK: Of electricity uses in
13 relation --

14 THE CHAIRMAN: Over what period of time,
15 or what are we talking?

16 MR. MARK: It's the relationship between
17 gross domestic product and electricity consumption.

18 THE CHAIRMAN: Over what period of time?

19 MR. MARK: Well, Mr. Burke will correct
20 me if I am wrong, over the period 1990 to 2010 Hydro is
21 forecasting that that average will be an intensity of
22 .9.

23 THE CHAIRMAN: Do you agree with that,
24 Mr. Burke?

25 MR. BURKE: On average, yes.

1 MR. MARK: Mr. Burke, in fairness to Mr.
2 Burke, goes on to say, as he said to Mr. Shepherd, that
3 in the terminal year we are concerned with here, 2010,
4 the number for that year is .85.

5 THE CHAIRMAN: All right. Now what is
6 your next question?

7 MR. MARK: Q. Mr. Burke, if you apply,
8 looking at these averages, if you apply the average
9 intensity of .9 to the figures for GDP, the two numbers
10 at the end of the range, you will get, at least in
11 terms of expressing the averages, the range of
12 uncertainty which should be the minimum range of
13 uncertainty for your basic load growth over that
14 period; is that fair?

15 THE CHAIRMAN: Well, he doesn't think you
16 can do that. Perhaps I am putting words into his
17 mouth.

18 MR. MARK: That's what I am trying to
19 determine, whether that will yield that.

20 MR. BURKE: I think if you are asking me
21 now, have we mathematically, correctly done this, I
22 think that is a very technical discussion and is a
23 simulation exercise.

24 We started this conversation talking
25 about what we do to each intuit about these numbers.

1 But I think now if you are turning to, is this
2 mathematically correctly transforming GDP into load, I
3 can say I am confident it does. If it doesn't work out
4 exactly by some ratio here, I will stand behind the
5 mathematics that was done to derive this band using the
6 procedures we have outlined in great detail.

7 To reconstruct piecemeal, the components
8 here, I think is not a fruitful use of our time.

9 Is that the point you are making, that we
10 have made a mathematical error here?

11 MR. MARK: Q. No, I don't think there is
12 any mathematical error at all So if we can just look
13 at the question.

14 Am I correct that you have identified the
15 relationship between the intensity and these average
16 growths, growth rates and the uncertainties associated
17 with them?

18 MR. BURKE: A. Yes, this a simulation
19 exercise and one cannot go one for one mapping points
20 onto points. This a simulation of a distribution with
21 another distribution to get a third distribution, and
22 it doesn't make sense to just take the end points and
23 say, I should be able to translate this point into this
24 point. We have could have saved the whole simulation
25 exercise if it was as simple as that.

1 Q. But you do this exercise of getting
2 your uncertainty range.

3 A. What we are dealing with is an
4 equation that has product terms in it, an uncertainty
5 about coefficients times uncertainty about GDP. And it
6 is not the case that you are adding uncertainties here.
7 What you are doing is multiplying distributions
8 together, and what you get is not necessarily what you
9 can intuit to be the sum of different uncertainties.
10 In other words, if you want to have partition this
11 problem into GDP uncertainty, coefficient uncertainty,
12 and the residual uncertainty and then multiply
13 something by .85, you can't do it. It's not the way it
14 works.

15 Q. I am not suggesting that --

16 A. But you are asking me what I would
17 expect to get if I multiply two numbers together and I
18 am saying it's not really a meaningful question for
19 this approach.

20 Q. All right. I won't belabour it
21 anymore. We can pursue that perhaps later.

22 Let me ask you this, just to follow up on
23 that, you raised question of the coefficient
24 uncertainty, that is the degree of uncertainty
25 associated with that number of .85 or .9, whatever it

1 is; is that correct?

2 A. Yes. It's in fact two coefficients
3 that yield this in the equation.

4 Q. And that's the linear and the
5 quadratic term that go into the equation?

6 A. The coefficient on GDP and the one on
7 GDP squared.

8 Q. And have you estimated the
9 uncertainty associated with those coefficients?

10 A. Yes.

11 Q. And is that something that you have
12 available for us or could give us?

13 A. Yes. Okay, well I guess the...

14 This is my favourite exhibit, No. 9,
15 which has a different page --

16 MR. B. CAMPBELL: Mr. Chairman, I sort of
17 have been listening to this and it seems to me that Mr.
18 Burke has explained his revised answer and that my
19 friend is now wandering into all sorts of other areas.

20 I thought that the purpose of re-cross-
21 examination was with respect to the very particular
22 matter that he raised and no other. In my submission,
23 if we hope to have anything on this, he has got to
24 observe what he said, which is he wanted to clarify one
25 simple point. I think it has been clarified, in my

1 submission.

2 MR. MARK: If I can be permitted just a
3 moment, Mr. Chairman, I think I can establish how this
4 arises directly out of the answer that Mr. Burke gave
5 me.

6 THE CHAIRMAN: I think that Mr. Campbell
7 has -- I don't know where this discussion is leading us
8 or why it's being -- It's beyond me. I have got to be
9 quite frank with you. I don't know what point you are
10 trying to make here.

11 Perhaps if you could explain to me what
12 you think the significance of this evidence is then
13 perhaps I could understand your question better.

14 MR. MARK: The point is quite simple, I
15 think, Mr. Chairman.

16 If you apply the .9 intensity to the 2
17 per cent uncertainty range for GDP, you get an
18 uncertainty range of 1.8 which should be the minimum
19 uncertainty range for your basic load growth.

20 THE CHAIRMAN: Yes.

21 MR. BURKE: That's not correct.

22 THE CHAIRMAN: He doesn't agree with
23 that.

24 MR. MARK: He doesn't agree. I can
25 perhaps explore it. That's where we coming from.

1 The premise, one of the premises of Mr.
2 Burke's answer to Mr. Shepherd is that that assumes --
3 I mean, that deals with that coefficient of .85 and if
4 you apply that we say you get that 1.8 number, which is
5 the minimum and that's --

6 THE CHAIRMAN: Actually, it's 1.9, isn't
7 it?

8 MR. MARK: Two times .9 is 1.8. And that
9 already accounts for all of the uncertainty in the load
10 growth.

11 THE CHAIRMAN: Except for .1.

12 MR. MARK: That's right, because it's 1.9
13 now in the corrected numbers, you are quite correct.

14 So the additional source of uncertainty
15 that Mr. Burke has just indicated that we have to deal
16 with in this context is the uncertainty associated with
17 the coefficient itself. The point forecast is that it
18 is .9, but how much uncertainty is associated with
19 that?

20 THE CHAIRMAN: I think that goes beyond
21 the scope of what you were brought back here to do,
22 because you questioned him about that, if my
23 recollection is right, back when you were doing your
24 cross-examination.

25 MR. MARK: I didn't question him about

1 that, Mr. Chairman, because at that point the simple
2 conclusion that the ranges themselves just on the
3 analysis of GDP growth were implausible was sufficient.

4 Now he has given an explanation which has
5 directly to do with whether that intensity is 1 or is
6 it .85. That changes the whole scenario.

7 I can end it very quickly. I just want
8 to know, what is the uncertainty associated with making
9 that choice? Is it 1, in which case the answer he gave
10 last time is correct, or is it .85, and what is the
11 uncertainty associated with that?

12 MR. B. CAMPBELL: With respect, he has
13 answered that question. He said it was .85 in the
14 terminal year and he said that he doesn't do it by way
15 of these averages and it is appropriate to do so. And
16 he said that this simple mathematics that my friend has
17 simply posited between these two ranges are wrong.
18 What more can he say?

19 MR. MARK: But he says there is an
20 uncertainty associated.

21 Even if he says the point forecast for
22 2010 is .85, that is not a certainty. He has said,
23 Hydro has estimated what degree of uncertainty is
24 associated with that forecast. That's my simple
25 question.

The .85 is the explanatory variable that Mr. Burke has put on the table as changing or explaining the evidence he gave to me in cross-examination.

...

1 [3:03 p.m.] My question now is simple. What is the
2 uncertainty associated with Hydro's prediction that it
3 is .85 and not 1.0?

4 THE CHAIRMAN: Do you regard that as a
5 simple question?

6 MR. BURKE: Well, it is actually -- it is
7 not a simple question.

8 MR. MARK: Well, the question is simple.
9 Let's see about the answer.

10 MR. B. CAMPBELL: Just a minute.

11 MR. BURKE: Let me -- I said it was two
12 coefficients and, in fact, in order to infer the
13 uncertainty in the elasticity, you do have to in fact
14 do a simulation exercise. And what I probably have
15 available is what happens if you simulate without
16 taking uncertainty in the coefficients and uncertainty
17 in the residuals into account and what happens when you
18 do. But I am not sure that I have the result here or
19 that we have actually calculated for the 1990 load
20 forecast the result if all we are leaving out is the
21 coefficient uncertainty.

22 I think you have to appreciate, this is
23 not a simple adding up exercise. These are
24 distributions times distributions, which are -- there's
25 no analytical solution. They have to be simulated to

1 see what the joint -- the product distribution looks
2 like.

3 MR. MARK: Q. I understand --

4 THE CHAIRMAN: I think we will have to
5 leave it at it, Mr. Mark, with great respect.

6 MR. MARK: All right. Very well. Thank
7 you, Mr. Chairman, for your indulgence.

8 THE CHAIRMAN: Mr. Trivett?

9 MR. TRIVETT: Thank you, Mr. Chairman,
10 Members.

11 CROSS-EXAMINATION BY MR. TRIVETT:

12 Q. Mr. Burke, my first set of questions
13 relate to your model.

14 Do I understand correctly from your
15 previous testimony, Mr. Burke, that your model does not
16 factor in the supply options, but is exclusively a
17 forecasting model? Is that a fair statement?

18 MR. BURKE: A. The short answer is
19 "yes," but there is more than one model.

20 Q. There is more than one model?

21 A. There are two different ways of
22 looking at long-term load growth - econometric and
23 end-use - and those are both considered in coming up
24 with the forecast, but neither of them considers supply
25 side.

1 Q. Neither considers supply side?

2 A. Yes.

3 Q. Well then, Mr. Burke, as a
4 forecaster, are you required to know how Ontario Hydro
5 can supply particular demands? Is that relevant?

6 A. No, I am not.

7 Q. Not relevant. Well, Mr. Rothman
8 then, are you required to understand how the supply
9 side of the equation works?

10 MR. ROTHMAN: A. No.

11 Q. You're not. Well, perhaps our
12 understanding is incorrect, but to try and arrive at
13 some kind of a short statement, is it proper to
14 understand forecast as historical consumption plus
15 growth, net of positives and negatives? Is that too
16 simple?

17 MR. BURKE: A. Are you taking now about
18 load growth?

19 Q. Yes.

20 A. If you can explain what the meant;
21 positives --

22 Q. Forecast equals historical
23 consumption plus growth net, positives and negatives?

24 A. What do you mean by "net of positives
25 and negatives"?

1 Q. Well, all, which would include
2 positive growth and negative effects of the future
3 change on what already exists?

4 A. In other words--

5 Q. In other words, you can have negative
6 growth.

7 A. --existing consumption plus net
8 growth.

9 Q. Yes.

10 A. Would that be a fair statement?

11 Q. Yes. Is that fair? Is that too
12 simplistic an understanding?

13 A. I guess you could put it that way,
14 yes.

15 Q. Well, if you can put it that way for
16 argument purpose, then is the forecast not also an
17 assignment of growth in a time frame?

18 A. Yes.

19 Q. Yes, all right. Well then, the time
20 frame indicates your expected peak?

21 A. Oh. Maybe, maybe I didn't understand
22 what you meant by "time frame." Then what do you mean
23 by "time frame"?

24 Q. Yes. Well, growth in a time frame
25 will show valleys and peaks.

1 A. Well --

2 Q. As distinct from considering it just,
3 you know, so much energy today.

4 A. Well, over the course of the year,
5 load growth has valleys and peaks. It has valleys and
6 peaks on a daily basis, on a seasonal basis, and I
7 suppose over the economic cycle itself, there are years
8 where growth can be, sorry, load can be higher than in
9 subsequent years. We are certainly going through
10 something like that right now. Is that what you mean
11 by --

12 Q. Yes. Well, you see, I am trying to
13 find out whether you comprehend load forecasting in
14 those terms or simply in an aggregate amount of energy
15 to be consumed.

16 A. Okay. We produce a short-term load
17 forecast for five years which is ultimately
18 disaggregated to an 8,760-hour per year picture of load
19 in those five years and for the total system.

20 Beyond that, we do not provide a time
21 disaggregation beyond monthly load levels; that is, we
22 provide a forecast by month for peak in energy for the
23 remainder of the time highs in '95 to 2015.

24 Q. So, is it that that leads you then to
25 your demand management?

1 A. No. I would --

2 Q. What I am concerned with is, what is
3 the purpose of demand management if it doesn't matter
4 when the demand occurs?

5 A. Oh. It certainly does matter when
6 the demand occurs.

7 Q. Well --

8 A. Certainly, when I said we provide a
9 monthly forecast beyond 1995, for instance, the monthly
10 forecasts for the winter months are typically -- well,
11 let's do it on the calendar year basis.

12 The monthly forecast for December is
13 typically higher than the forecast for the previous
14 summer, July or so. And also, in considering what one
15 would expect to be the load on peak day in the winter,
16 while we do not provide the complete break-out in the
17 long-term, the planners do use typical day profiles in
18 doing their system planning for days in the winter of
19 each year, so that they can look at the benefits of
20 shifting from peak hours to off-peak hours.

21 Q. So, typical day load is a demand
22 dimension; it is not with consideration to, to the
23 supply problem?

24 A. Well, there are layers and layers of
25 this problem. I can provide a forecast of demand and

1 we can certainly provide typical days, sort of what the
2 load profile looks like on a 24-hour basis for the
3 coldest day of the winter; that sort of thing.

4 What the planners actually plan to may
5 not necessarily be the load that I provide or that
6 could -- the pure consumption. There may be planning
7 considerations that suggest that certain capacity is
8 available, can perform -- I really do not want to get
9 into the planners' problem here.

10 Q. No. I can appreciate that, but on
11 the other hand, it seems that the statement of the load
12 and of your demand forecast is relevant to the
13 supply -- that the supply question and the demand
14 relate upon each other and I am trying to determine if
15 you simply arrive in your load forecasting with the
16 demand by its days without really regard for whether or
17 how it can be supplied, and that really basically is
18 what you do?

19 A. Okay. I think you asked me for about
20 whether I have to be worried about whether it can be
21 supplied and all that.

22 Q. Yes.

23 A. The feedback of the supply side on
24 the load forecast is through the price of electricity.
25 Effectively, the load forecast has to have in it a view

1 about the cost of supplying power to meet the load
2 forecast.

3 Q. Right.

4 A. And so, for instance, if we were to
5 find ourselves in a situation where we didn't have
6 enough resources and we were obliged to plan on
7 purchasing extremely expensive power for 10 years from
8 some other jurisdiction and that raised the cost of
9 power significantly, then the load forecast would have
10 to take that into account because then we could expect
11 that there would be a demand response to that higher
12 price.

13 But what we have done is, we have
14 estimated costs for the recommended plan and that is
15 what underlies the load forecasts.

16 Q. So, it would not be fair to say that
17 you factor the load without regard to the cost of
18 meeting it? You do have a feedback on cost?

19 A. The cost of meeting it, yes.

20 Q. Yes. Then do you in fact meet with
21 the supply side personnel to discuss how they may meet
22 your load forecast under a particular scenario?

23 MR. B. CAMPBELL: Well, Mr. Chairman, I
24 hesitate to interrupt, but hasn't this all been
25 covered several times?

1 It is clear, I think, on the evidence
2 that the cost that is used as a price by Mr. Burke in
3 the load forecast is not derived from system planning
4 alone, that there is a financial planning group that
5 works out the cost of power associated with the plan
6 that system planning is putting forward, and it is that
7 financial planning group that gives that figure, I
8 think the evidence is clear, to the forecasters for
9 their respective purposes. And if that is any help to
10 my friend, I think that is all on the record several
11 times.

12 MR. TRIVETT: Well, I think it is, but
13 the thing that it seemed to me to be wrong, Mr.
14 Chairman - it has not been possible to sit here the
15 whole time and I may have missed it - but the
16 comparison that I have difficulty understanding is how
17 you meet, if you're only looking at demand side, how do
18 you meet the cost of the supply side unless you have a
19 supply side forecast?

20 THE CHAIRMAN: Well, the - and I think
21 that has been said quite often - the responsibility of
22 this group here is to forecast the basic load and they
23 do get information from the other parts of the
24 corporation as to what the price would be, given
25 certain --

1 MR. TRIVETT: Right.

2 THE CHAIRMAN: When then, there is an
3 interaction there, but it is the responsibility of
4 other people in the corporation to meet that demand and
5 whatever that demand happens to be. That may be
6 putting it into simple terms, but it is not part of
7 their involvement.

8 MR. TRIVETT: No. I appreciate that, but
9 what I wondered was, is there a forecast of that
10 meeting? Is that a separate forecast?

11 THE CHAIRMAN: Well, I am not sure what
12 you mean by that, and whatever it is, it is not what
13 those people do. They do not do that.

14 MR. TRIVETT: Other than that they meet
15 with these people at a point; is that not correct?

16 THE CHAIRMAN: And get price information
17 from them and prices based on the statutory
18 considerations, as well as other considerations.

19 ---Off the record discussion
20
21
22
23
24
25

...

1 [3:17 p.m.] MR. TRIVETT: Excuse me, Mr. Chairman.

2 THE CHAIRMAN: If I say something that
3 isn't right, you tell me.

4 MR. BURKE: That's great.

5 MR. B. CAMPBELL: They have been advised
6 to be slightly bashful when it is necessary to do that,
7 but they have been told to do that if it's necessary.

8 MR. TRIVETT: Well, is there another
9 panel where we will have something you can call
10 forecasting on the supply side?

11 MR. B. CAMPBELL: Absolutely. The whole
12 balance of this hearing will be working towards the
13 various demand and supply components and how the plans
14 have been put together.

15 MR. TRIVETT: But that is not a forecast
16 in the sense that this is a forecast, is it?

17 MR. B. CAMPBELL: Well, I would like to
18 think that it was a certainty, but at some level it is
19 a forecast. It's a plan. It's a plan bearing in mind
20 the forecast of the requirement for electricity, the
21 kinds of services that electricity can meet.

22 MR. TRIVETT: All right, Mr. Chairman, we
23 will leave that for the moment.

24 Q. Can I go on, then? Can your model
25 compare system value, energy value, peak value of

1 hydraulic with thermal conventional or nuclear thermal?
2 Does your model compare these at all or, you know, the
3 different ways of producing the energy? Or does it
4 just view that there is a sort of a unitary generator
5 that can produce an unlimited proportion or are you
6 really not concerned with that; you just have a price
7 and a quantity? All right, thank you.

8 MR. BURKE: A. Just a price.

9 Q. Do you for your forecasting purposes
10 understand, and can you tell this panel your
11 understanding of the load following issue as regards
12 nuclear, fossil, and hydraulic from the eyes of a
13 forecaster or is that not --

14 THE CHAIRMAN: This is the same thing.
15 This is not what they do. They don't get involved in
16 that. This is not their job; it is other people's job.

17 MR. B. CAMPBELL: And we have specific
18 panels on each of those types of generation that will
19 be speaking to just those kinds of issues.

20 MR. TRIVETT: Excuse me, Mr. Chairman.

21 May I now turn to some graph
22 presentations that I believe have been placed before
23 you, Mr. Chairman? I don't know whether you had
24 planned to take a break, whether you want to take it at
25 this moment before we turn to these because then --

1 THE CHAIRMAN: We can keep going.

2 MR. TRIVETT: Keep going, fine.

3 Could we enter this set of graphs as an
4 exhibit, Mr. Chairman.

5 THE CHAIRMAN: Yes, it will be the next
6 exhibit. I see some there are some interrogatories
7 attached to it --

8 MR. TRIVETT: They are just for
9 convenience, not necessarily part of the exhibit, no.

10 THE REGISTRAR: No. 133, Mr. Chairman.

11 THE CHAIRMAN: 133, Thank you.

12 ---EXHIBIT NO. 133: Set of graphs based on Figure
13 3.13; and load curves, comparative
and typical daily.

14 ---Off the record discussion.

15 MR. TRIVETT: Excuse me, Mr. Chairman.

16 MR. B. CAMPBELL: I'm just not sure I
17 have the right package, Mr. Chairman. Perhaps I could
18 ask Mr. Trivett. This is numbered 1 through --

19 MR. TRIVETT: 1 through 15, yes.

20 MR. B. CAMPBELL: Thank you.

21 MR. TRIVETT: Q. Now first of all, Mr.

22 Burke, in the evidence so far, I understand you have
23 strongly suggested that -- well then, let's take this
24 to you, Mr. Rothman. In your evidence so far, you have
25 strongly suggested that this plan must err on the

1 conservative side. Is that a fair statement?

2 MR. B. CAMPBELL: That's absolutely...

3 MR. ROTHMAN: I don't know that I have
4 made such a suggestion. I don't recall it.

5 MR. TRIVETT: Q. Well, in terms of being
6 out of power, you were on the low side rather than
7 forecasting power that is beyond anything the system
8 could supply? Or do you just arrive at the forecast
9 whatever it may be?

10 See, again you come back to the question
11 of whether the supply side is relevant to a forecast.

12 MR. ROTHMAN: A. It's my job, and with
13 the very able assistance of Mr. Burke, to forecast what
14 we see as the most likely or median load forecast; that
15 is, the amount of electricity which would be demanded
16 in the Province of Ontario.

17 In the basic load forecast in the absence
18 of Ontario Hydro programs to influence through
19 incentives or other valuable considerations the demand
20 in the Province of Ontario, that responsibility does
21 not include knowing whether that expected demand for
22 electricity can be supplied from the existing or
23 planned or any other system. It is our responsibility
24 to forecast the load.

25 Q. And yet you do forecast load

1 management.

2 A. We are also responsible for producing
3 a primary load forecast which is the forecast of the
4 load that Ontario Hydro must supply after taking into
5 account the effects of Ontario Hydro's direct programs
6 of incentives and other valuable considerations
7 intended to reduce load and time-of-use rates as well,
8 intended to shift load and --

9 Q. It is not--

10 A. -- load displacement.

11 Q. --the purpose of that management to
12 bring things back to the low side? That's how I was
13 reading it.

14 A. The intention of it of course is to
15 reduce load in ways that are economic. Now economic in
16 that sense is defined as having costs lower than those
17 in the potential supply side. So we have to have some
18 awareness in making that estimation of what the avoided
19 costs are and we then have to be aware of what the
20 potential for demand management is and make a forecast
21 or do that in conjunction with energy management branch
22 and make forecast of what the penetration rates will be
23 on that potential demand management.

24 So, yes, we have to be aware of what the
25 avoided cost is, but that forecast of demand management

1 again is dependent on that of what it costs, but
2 independent in its quantity at least, at least
3 conceptually, independent in its quantity over what the
4 supply capacity of the system is at that time.

5 MR. BURKE: A. I would just like to
6 clarify maybe one thing that Mr. Rothman said. The
7 actual screening of which options are economic for
8 demand reduction is done by system planning using
9 avoided costs.

10 Once they have indicated that an optional
11 measure is economic in comparison to supply set
12 options, further analysis is done to see what its
13 potential is and so on.

14 MR. TRIVETT: Well then, through you, Mr.
15 Chairman, might I ask Mr. Campbell, would a deeper
16 discussion of this question perhaps be more properly
17 presented to system planning?

18 MR. B. CAMPBELL: In terms of the
19 difference between the basic load forecast and the
20 primary load forecast, the effective demand management
21 programs, how they are evaluated, the kinds of tests
22 that they have to pass from the total customer cost
23 tests through to avoided costs and all of the other
24 tests, that will all be dealt with in Panel 4.

25 MR. TRIVETT: There will not be a

1 forecaster in that discussion?

2 MR. B. CAMPBELL: Mr. Burke--

3 MR. TRIVETT: Will be there.

4 MR. B. CAMPBELL: --is pleased to say
5 that he will be part of that discussion.

6 MR. TRIVETT: I think then that perhaps I
7 have a series of questions that might better go to that
8 discussion, Mr. Chairman.

9 MR. B. CAMPBELL: I should say he is very
10 anxious to get off the stand so he can answer
11 interrogatories.

12 MR. TRIVETT: I'm sorry, Mr. Chairman,
13 but I have a disagreement here.

14 THE CHAIRMAN: Do you want to take the
15 break now?

16 MR. TRIVETT: Mr. Hunter feels that in a
17 way part of this can be carried on now. I would like
18 to take ten minutes to consider that because it seems
19 to me that it's one of these chicken/egg discussions,
20 that if you don't have a part, can you have the other
21 part, and I really feel that if Mr. Burke is going to
22 be there later -- but he says Mr. Rothman isn't.

23 THE CHAIRMAN: Mr. Rothman will be in
24 some later panels, but not in that one.

25 MR. ROTHMAN: No.

1 THE CHAIRMAN: No? Is this your last
2 appearance?

3 MR. ROTHMAN: I am pleased to say
4 (Laughter), it is my expectation that this is my last
5 appearance.

6 THE CHAIRMAN: I thought I saw your name
7 on another panel, that's all.

8 MR. B. CAMPBELL: I don't let anybody off
9 the hook that easy.

10 THE REGISTRAR: This hearing will recess
11 for 15 minutes.

12 ---Recess at 3:30 p.m.

13
14
15
16
17
18
19
20
21
22
23
24 ...
25

1 ---On resuming at 3:45 p.m.

2 THE REGISTRAR: This hearing is again in
3 session. Please be seated.

4 ---Off the record discussion.

5 THE CHAIRMAN: Mr. Trivett?

6 MR. TRIVETT: Thank you, Mr. Chairman.

7 Q. Mr. Rothman, can we say that the cost
8 of being low in power is greater than the cost of over
9 capacity?

10 MR. ROTHMAN: A. This is not my area of
11 expertise but as a general proposition, the cost to our
12 customers of having insufficient power tends to be high
13 and the cost relative to the cost of Hydro of having
14 excess supply capacity.

15 Q. Does this not bring us back to the
16 position that it is better to err on the high side?

17 MR. B. CAMPBELL: Hasn't Mr. Rothman
18 answered this question, with respect? Both of these
19 people have answered this question as to what they are
20 forecasting.

21 THE CHAIRMAN: I think you did ask that
22 question last time.

23 MR. TRIVETT: I am asking if this brings
24 us back to that point, Mr. Chairman.

25 THE CHAIRMAN: Okay.

1 MR. BURKE: From the perspective of the
2 load forecast, it remains the case that the forecast is
3 prepared without taking that consideration into
4 account. If the planners wish to plan differently
5 because of that risk that's their business. But we try
6 to forecast what the demand for electricity will be.

7 MR. ROTHMAN: And we should. If we as
8 forecasters say, well, there is an asymmetric loss
9 function here and therefore we should bias our forecast
10 upwards to ensure that there is a lower probability of
11 the risk of -- there is a lower probability of
12 insufficient supply capacity, then what will the
13 planners do with that? How can the planners plan
14 rationally if what they are getting is a biased
15 forecast.

16 They are going to make a rational plan.
17 They understand that asymmetrical loss function just as
18 well as we do. I would hope they would understand it a
19 lot better, and I think they do. And I think it is our
20 responsibility to give them an unbiased forecast,
21 otherwise they are lost. They cannot tell how much the
22 forecast is biased and they can't tell exactly what
23 they have to plan to.

24 MR. TRIVETT: Q. We were not suggesting
25 a bias. We were merely suggesting that you try to have

1 a supply side that erred on the high side rather
2 than -- because you have in this chart 3-13, you talk
3 about an upper bound and a lower bound in your
4 projection.

5 MR. ROTHMAN: A. Yes.

6 Q. The upper bound is a high side, is it
7 not?

8 A. Again, the forecast that we make for
9 the planners is not a straight line. It's a range.
10 And that range is there to handle this uncertainty.
11 Again, what the planners do with it, is their
12 responsibility.

13 To answer your question a little more
14 briefly perhaps, yes, the upper bound is intended to be
15 the upper limit, an upper limit such that there is a 10
16 per cent probability that actual load will be above
17 that bound.

18 Q. And the lower bound is likewise a 10
19 per cent probability it would be below that bound?

20 A. Below that bound.

21 We don't select those bounds on the basis
22 of some consideration of what the loss function is if
23 actual load is above the bound or below the bound. We
24 select those bounds on the basis of a methodology that
25 attempts to quantify the uncertainty in the load, and

1 we think it does it reasonably well. It's not an easy
2 task.

3 Q. Well, if we accept that we could
4 postulate that the upper bound is a conservative load
5 forecast and the lower bound is a conservative demand
6 forecast, if those are not impossible terms for us to
7 use for purposes of the questions I want to ask you,
8 then it seems --

9 MR. B. CAMPBELL: I am not comfortable
10 with them asking questions on that. There has been no
11 basis for them to be described in that way and it is
12 going to be entirely misread.

13 It is an uncertainty with upper and lower
14 limits to an 80 per cent uncertainty band. And I think
15 if we start trying to redefine everything in the middle
16 of this we are going to be in terrible trouble.

17 THE CHAIRMAN: Perhaps you could ask your
18 question. What is your question, Mr. Trivett?

19 As I understand it, what happens is that
20 the planners, or whoever, take this forecast and then
21 they have to take into account the extent to which they
22 have to they make a prediction about the possibility
23 that the forecast will be too high or too low. But
24 that's not the responsibility of these particular
25 witnesses. Their responsibility, as they have said, is

1 to as best they can, provide a forecast of what the
2 basic load will be and what the primary load will be.

3 MR. TRIVETT: My concern, Mr. Chairman,
4 is that when we get to the point of discussing what I
5 want to discuss, there will be no economist to discuss
6 the economic impact. And if that's the way it has to
7 be then that is the way it has to be.

8 THE CHAIRMAN: Mr. Rothman is here to
9 talk about what economic factors go into forecasting
10 what the load will be. There is quite different
11 considerations that go into determining what the costs
12 are.

13 MR. TRIVETT: Well, Mr. Chairman, may I
14 now shift the emphasis to another point of concern.

15 Q. That is, Ontario Hydro, over four
16 decades of advertising, I guess you call them
17 campaigns, that were emphasized by Mr. Poch in the CEG
18 Exhibits 108 and 109, which I believe we have referred
19 to too, I believe Mr. Rothman, you have stated with
20 some conviction that the long-term trends and the
21 economy associated with them will tend to overcome
22 short-term glitches in the system. Is that a fair
23 summary of your statement?

24 MR. ROTHMAN: A. That the economy will
25 tend to grow at its potential growth rate and that

1 cyclical variations from that growth rate will tend to
2 correct themselves over time.

3 I didn't give you an unqualified "yes"
4 because I am not sure on the record what overcome
5 short-term glitches is going to mean.

6 Q. I think it was your phrase. I don't
7 know.

8 Well, if I am right in assuming that the
9 statement holds true to the degree that your demand
10 management plans in some circumstances might be nothing
11 more than plans to deal with that unevenness or what I
12 have called glitches; is that fair?

13 A. That's why I was careful to talk
14 about economic cycles. The demand management plans are
15 not intended deal with the effect of cyclical economic
16 factors.

17 Q. They are rather to deal with the
18 nature of the demand, are they?

19 A. Rather to deal with the nature of the
20 demand and the nature of the demand management
21 alternatives with which they deal.

22 Q. Well, these incentives would be
23 considered by the people to whom they are put as
24 economic incentives?

25 A. Yes. And here we are using the word

1 "economic" in the sense of financial rather than in the
2 sense of dealing with the aggregate economy.

3 Q. But my question is then, are these
4 incentives - and it may be more properly a question for
5 Mr. Burke - these incentives be expected to wear-off
6 off over the long-term on discontinuance of the
7 advertising campaign such as those laid out in 108 and
8 109, so that over a period of time that which had
9 affected its introduction would cease to have an effect
10 on the system?

11 MR. BURKE: A. Well, there are two
12 things here, there is advertising and then there is
13 incentives. Are you asking about previous advertising
14 campaigns or are you asking about future incentive
15 programs for demand management? I am not clear from
16 your question.

17 Q. Deal with these separately if you
18 want, I think they have the same effect.

19 A. Past advertising campaigns, to the
20 extent that they have affected decisions, if they have
21 affected people's decision then there will be some
22 equipment in place that would not otherwise have been
23 put in place. It might be put in place a little
24 earlier because of the advertising, or it might be put
25 in place where it would not otherwise have been put in

1 place ever. And it's very difficult to quantify how
2 much of each of those kinds of things has happened
3 historically. But arguably, advertising would have had
4 some effect, we don't know how much, and that effect
5 would persist for the life of the equipment that was
6 brought.

7 If advertising ceased, new
8 decision-makers might not be influenced to the extent
9 that previous ones were. I don't know how much that
10 influence is. That's the problem we have had with
11 previous lines of questioning this this area. Because
12 it's very difficult to distinguish what people would
13 have done anyway from what the advertising itself has
14 caused people to do.

15 In the future demand management
16 incentives are intended - to the extent that they cause
17 demand reductions that are not contained in the basic
18 load forecast - they are intended to be incentives to
19 make purchases of equipment, do things that people
20 would not otherwise have done to reduce the level of
21 demand for electricity. And those effects will
22 continue into the future for the life of the equipment
23 that they purchase or acquire, or whatever, change in
24 operating practice, whatever it may be. But it's again
25 not a simple story.

1 It depends a little bit on, would they
2 have purchased that equipment a little bit later and by
3 giving an incentive are we just advancing the
4 efficiency improvement, or whatever, or are we causing
5 an efficiency improvement that never would have
6 occurred. There are questions that have to be
7 considered in answering the question of the impact of
8 incentives in future. And so effectively, yes, it
9 would have a time impact, impact over time, but how
10 long and how much is a subject of some analysis.

11 Q. Well then, as far as the advertising,
12 which discontinues a concern to have a reduction into
13 the future by a withdrawal of the advertising
14 campaign --

15 A. No, you wouldn't expect a reduction
16 in the future. You would expect that whatever
17 equipment people have, they have. If someone has
18 bought a house and it happens to have baseboard
19 electric heating and that heating was installed by the
20 builder 20 years ago and that person was influenced by
21 an advertising campaign, the house still has baseboard
22 electric heating and is likely to continue to have
23 electric baseboard heating for some time to come. That
24 doesn't get reduced by the absence of advertising.

25 What changes is the number of people in

1 future who might buy electric space heating, if that
2 was influenced by advertising in the past, that might
3 be lower.

4 Q. So that the type of equipment you
5 use, you have taken the long-term example, house
6 heating, but equipment by and large doesn't have
7 anything like that kind of a life so that equipment
8 would have a sooner or shorter period to waste.

9 A. I think most of the advertising that
10 we were talking about with Mr. Poch related to
11 residential appliances or home heating, and residential
12 appliances have quite along life. Refrigerators,
13 stoves, these pieces of equipment have fairly long
14 useful lives.

15 Q. Rather less than your forecast,
16 today's equipment more in the term of seven or eight
17 then the old time twenties?

18 A. Are we saying 20 years for
19 refrigerators?

20 DR. BUJA-BIJUNAS: A. Most
21 refrigerators, stoves, et cetera have lifetimes in the
22 order of 15 to 17 years.

23 Q. So that those which came in during
24 this period will be discontinued in the current period?

25 MR. BURKE: A. Yes. And the replacement

1 of stocks over time is part of our forecast. A piece
2 of equipment brought 20 years ago, for instance, might
3 be coming go up for replacement is considered and would
4 expect not to be replaced at the efficiency level at
5 which it was bought, but at current efficiency levels.

6 Q. Which will be lower consumption
7 items?

8 A. Yes. And that's one the forces that
9 would tend to lower demand in the residential sector,
10 other things equal, other forces push it up.

11 Q. But if we might turn to the chart
12 which has now kindly been put up, this is No. 5. You
13 have here load shapes from Exhibit 108, page 9, and you
14 see there the lower is December '37, December 9, 1937,
15 and the upper is December 12, 1954.

16
17
18
19
20
21
22
23
24 ...
25

1 [4:03 p.m.] Are we fair in saying that this was the
2 period of that advertising push to use electricity?
3 This is only for the City of Toronto, but presumably
4 that is representative of the system.

5 A. Mr. Poch did file his exhibits, but I
6 cannot claim to really be able to have a position on
7 when the advertising campaign was stronger or weaker,
8 and certainly -- I do not know where you are going with
9 that, but I certainly do not know whether the
10 advertising campaign was, this was the big push on
11 advertising or whether it, in fact, occurred even
12 later.

13 Q. Well, between these periods, you will
14 note that the morning and afternoon valleys are filled
15 up, so that the configuration in the later, the
16 December 12th, '54, is much higher than the
17 configuration in the 1937.

18 A. Well, you can look at these curves
19 two ways. I mean, it looks like the peak -- you can
20 also say the peak has been flattened, but you know...

21 You said the valleys disappeared. It is
22 the same thing as the peak has been flattened. I think
23 there are two ways of looking at the same question.

24 Q. Well then, would you look at the
25 chart from the Hydro training manual, which is Chart

1 No. 6?

2 Now, this is the comparison of the east
3 and west systems and the east system configuration,
4 December 15th, 1971, is it? And that configuration is
5 closer, is it not, to the configuration which we had
6 shown December 12th, '54; comparable configuration?

7 A. There is absolutely no relationship
8 between these two curves, absolutely none. The west
9 system is a system dominated by industrial load --

10 Q. Yes. I appreciate that and it is
11 quite a different configuration --

12 THE CHAIRMAN: Let him finish, please.

13 MR. BURKE: I think you asked me whether
14 one curve looked like the other. I don't think they
15 look like each other.

16 MR. TRIVETT: Q. No, I am sorry. I
17 wasn't asking you if the west and east looked alike.
18 They certainly do not.

19 MR. BURKE: A. No. What did the west
20 system look like December of '54? One looks like a
21 straight line; the other looks like a...

22 Q. No, I am sorry. Maybe my question
23 was inadequately -- unclear. I was comparing the east
24 system. I merely said that it, if it was the one,
25 which showed the east system and the west system. The

1 ones I wanted you to compare were the east system...

2 A. Okay.

3 Q. And to compare it with the
4 configuration of December 12th, 1954. I am suggesting
5 to you that in December 15th of 1971, you have a
6 comparable configuration to December the 12th of 1954,
7 or do I misunderstand you?

8 A. In broad terms, yes. There is a
9 night-time valley and a daytime, the daytime is higher
10 and the peak occurs at five o'clock in the afternoon,
11 between five and six; that is correct.

12 Q. Even though the load is perhaps
13 double or so?

14 A. There is no comparison. This is
15 Toronto versus east system Ontario Hydro.

16 Q. Yes. Well then, if you would look at
17 the chart on 7, on page 7, Exhibit 1, Ontario Hydro's
18 system load December 18, 1990, and we find that we have
19 much the same configuration continuing?

20 A. Yes.

21 Q. And then on Chart 8, we have
22 superimposed these configurations on one chart.

23 Now, this is simply the proportional load
24 shapes for all four as viewed on the earlier pages 5, 6
25 and 7, and superimposed for comparison's sake only, not

1 arguing the vertical scales.

2 First of all, they are -- this is
3 representative of the original shapes which we have
4 just gone through, is it not?

5 A. Yes.

6 MR. B. CAMPBELL: Well --

7 MR. TRIVETT: Q. The lines shown, each
8 have been given a date on the left-hand side of the
9 graph.

10 Are these loads at a comparable time of,
11 of year? The December loads, I believe that the peak
12 in each case, the 9th, the 12th, the 15th, the 18th of
13 December, and I think that the peak that you show in
14 your chart is...

15 THE CHAIRMAN: I take it that your point
16 is that if you do not advertise as much, you won't use
17 as much electricity. Is that your point? Is that what
18 you are getting at?

19 MR. TRIVETT: Well, during a consistent
20 advertising period, the load shape has taken on a shape
21 and maintained that shape.

22 THE CHAIRMAN: These are daily load
23 shapes. I don't know what -- how you -- what nexus do
24 you have between that and advertising campaigns? I
25 just do not understand it.

1 MR. TRIVETT: The presumption, I suppose,
2 to that question is that in a peak time of use, all
3 that which has been acquired to use is in use.

4 MR. B. CAMPBELL: Well, look, Mr.
5 Chairman, I do not think there has been any foundation
6 laid for these questions, at all, if that is what they
7 are getting at.

8 This is one day selected from four
9 different years, and to draw from that any meaningful
10 conclusion, at least in the kinds of questions that we
11 are seeing, it certainly would be my submission that
12 there has really been no foundation laid for drawing
13 any conclusion, and if my friend is trying to draw one,
14 it certainly escapes me.

15 THE CHAIRMAN: Why don't we get on to the
16 one which you have which shows the reduced load from
17 lack of advertising? Why don't we move on to that one?

18 MR. TRIVETT: Well, perhaps Mr. Campbell
19 is right, but we had thought that there was the same
20 basic trend shown in the previous graphs, Mr. Chairman.

21 THE CHAIRMAN: But it is only one -- it
22 is a pattern that, I suspect, goes through many days,
23 but it is a daily pattern over a random period of time.
24 I do not think it tells me very, very much.

25 MR. TRIVETT: Well, we put it together

1 with what their own manual shows as a typical daily
2 load curve, Mr. Chairman, so if that is what their
3 manual says is --

4 THE CHAIRMAN: That does not connect with
5 advertising. That is what I am trying to get at.

6 MR. TRIVETT: Well, I thought I had made
7 that connection with the comparison between 1937 and
8 1954 moving to a different load configuration, and they
9 show the typical as being that load configuration and
10 we show typical peak day loads as still holding that
11 configuration, but perhaps that is not conclusive.

12 THE CHAIRMAN: No.

13 MR. B. CAMPBELL: Perhaps my friend --
14 perhaps I should in fairness tell my friend that Mr.
15 Burke has testified several times during the course of
16 his cross-examination that he has attempted to derive a
17 statistical relationship between the periods of --
18 between advertising and an impact on load and has been
19 unable to find any statistical relationship.

20 I think if that is what you were getting
21 at, the evidence in fact, and I say it only because you
22 were not here, the evidence in fact has been quite the
23 contrary.

24 THE CHAIRMAN: It is certainly the
25 position of these forecasters that they cannot measure

1 the impact of promotional campaigns that do not have a
2 monetary aspect to them. Is that a fair summary?

3 MR. BURKE: That is correct, sir.

4 MR. TRIVETT: Q. Well, would you not
5 agree, Mr. Rothman, that the apparent commencement of
6 Hydro's load-building program is between the dates in
7 the bottom of those two curves that we originally
8 showed you? You say you do not know what dates are of
9 the commencement of that campaign?

10 MR. ROTHMAN: A. I certainly could not
11 agree to that, Mr. Trivett.

12 Q. No?

13 A. Hydro has engaged in campaigns of
14 various kinds over a very long period of time. There
15 was some discussion, for example, with Mr. Poch about
16 Hydro's selling of electric light bulbs that had gone
17 on for, from the early 1910s, that decade continuously
18 for, I don't know, I guess 30, 40 years. And one could
19 argue that that program arose and existed because
20 otherwise available light bulbs were less reliable and
21 efficient than the ones that Hydro was selling or one
22 could argue that that was because Hydro wanted people
23 to use electric light bulbs and therefore more
24 electricity.

25 I just -- I do not see that it is... We

1 have said that it is not possible to draw conclusions
2 about the effect of advertising and it seems to me that
3 you are trying to draw a conclusion that the difference
4 in load shape, if any, between the 1937 and 1954
5 Toronto Hydro curves shown here for single days is due
6 primarily to an advertising campaign that occurred in
7 the intervening years.

8 I would be very hesitant to draw any
9 conclusion of that kind about such an impact of an
10 advertising campaign over that kind of time.

11 You are talking about a period that goes
12 from the later stages of the Depression through one
13 world war and the Korean conflict and into a period in
14 the mid '50s of industrialization within Ontario, the
15 start of the period of industrialization in Ontario, of
16 heavier industries being built, and you have got curves
17 here for one part of the system on two or three
18 specific days. I just do not see how you can draw that
19 conclusion with any confidence, at all.

20 Q. Well, of course, nobody is pretending
21 that you have the same grid system in 1937. You do not
22 have a comparative. You simply have a period of
23 load-building which seems to have arrived at a plateau
24 which is continuing through the latter period. Am I
25 wrong in reading that from what has been presented?

1 [4:16 p.m.] MR. TRIVETT: Q. Would you think then
2 Mr. Rothman, that there is no comparison between Hydro
3 advertising and organizations such as Coca-Cola? If
4 they discontinued advertising, I suppose one doesn't
5 have to be an expert to assume that there would be a
6 considerable difference in the sale of Coke or Pepsi if
7 they discontinued advertising. Are you saying it is a
8 different effect for Hydro?

9 MR. ROTHMAN: A. Even within the
10 advertising community, there is an enormous difference
11 of opinion and disagreement about the effect of
12 advertising; establishing the effect even of particular
13 specific-focussed advertising campaigns is quite
14 difficult.

15 It is my understanding - again this is
16 not my tremendous area of expertise - but in certain
17 liability suits in the United States, the tobacco
18 companies are on record as saying that advertising for
19 cigarettes didn't influence people to smoke, and they
20 were large advertisers.

21 The effect of advertising is very
22 difficult to measure and is the subject of some
23 discussion. Again taking the tobacco industry as an
24 example, when television advertising was banned for
25 tobacco, the price of tobacco company stocks rose.

1 Q. Well, Hydro has now shifted their
2 whole campaign to a conservation advertisement. Are
3 you saying that you are unable to determine any effect
4 of your advertising campaign on the system and so now
5 we are advertising conservation because you didn't have
6 any effect by your advertising campaign?

7 A. We are unable to isolate and quantify
8 any effect.

9 Q. So you don't expect to be able to
10 isolate or quantify the effect of conservation?

11 MR. BURKE: A. No, we don't expect to be
12 able to isolate and quantify the effect of advertising
13 on the basic load forecast, so we have said that the
14 effect of broadly based advertising is included in the
15 basic load forecast as far as conservation is
16 concerned.

17 And when we get down to specific programs
18 where we know who we are dealing with and we have some
19 record of the transaction affected by that, as we have
20 done an audit for them, a study, we have given them
21 some incentive and so on, we know what they are doing
22 in response to our programs, at that stage we are in a
23 position to try to measure the impact and that is what
24 the electrical efficiency improvement programs are
25 about.

1 That is an explicit effect and it is part
2 of the adjustment of the basic load forecast to get the
3 primary load forecast.

4 Q. And does the Espanola experiment fall
5 into that category?

6 A. Yes.

7 Q. And who considers the cost of that in
8 the figures that are given to you in energy costs?
9 That comes to you as a given? You don't calculate that
10 sort of thing in your forecast?

11 I'm sorry, I don't understand. The cost
12 of what?

13 Q. There is a considerable cost, I would
14 suppose, to a thing like the Espanola system. I mean,
15 changing all the windows and all the equipment of a
16 whole municipality would cost you a considerable
17 dollar.

18 A. Yes. The investments that are being
19 made in that community are each considered to be
20 economic by the criteria that we discussed earlier.

21 Q. Is that part of your forecast or is
22 that something which is given to you?

23 A. Whether it's economic or not?

24 Q. Yes.

25 A. The test of whether the individual

1 measures that are being provided to customers or
2 offered to customers is tested against avoided costs.
3 And as I said just before the break, system planning
4 division does that test against the avoided costs that
5 they prepare.

6 Q. So the discussion we have, that
7 really belongs with system planning?

8 A. It belongs to Panel 4.

9 MR. B. CAMPBELL: Well, just a minute.
10 It belongs to Panel 4.

11 You will see that in, I think it is
12 Chapter 7, which Panel 4 will be dealing with, there
13 are a variety of tests discussed. There are no losers
14 tests, total customer cost tests, there is a variety of
15 tests discussed, dealing with it extensively in the
16 interrogatories of Panel 4 and they will all be
17 discussed in Panel 4.

18 MR. TRIVETT: Thank you, Mr. Campbell.

19 I am just running through questions which
20 I am moving elsewhere, Mr. Chairman, if I may.

21 THE CHAIRMAN: Yes.

22 MR. TRIVETT: Q. If it has not been
23 supplied before, Mr. Rothman, in your CV it refers to
24 basic assumptions, a set of basic assumptions used to
25 develop the Demand/Supply Plan. Is there anywhere that

1 the summation of those basic assumptions is made?

2 MR. ROTHMAN: A. In my what?

3 Q. In your CV?

4 MR. B. CAMPBELL: Can you give a
5 reference, please. What are you referring to?

6 MR. TRIVETT: Well, in the CV in
7 explaining the job function, it says that he is head of
8 the division which is responsible for provision of
9 economic forecasts, electricity sales forecasts,
10 analysis of electricity demands, economic consulting
11 and economic analysis of corporations. These forecasts
12 are part of the basic assumption set used to develop
13 the Demand/Supply Plan. And I am wondering if there is
14 a set of these forecasts which can be made available.

15 THE CHAIRMAN: Well, I think this has
16 been what the whole hearing has been about. Mr.
17 Rothman has extensively discussed the assumptions on
18 which his forecast is based.

19 MR. TRIVETT: My question is really
20 asking if there was a set as such which had been
21 circulated, sir.

22 THE CHAIRMAN: I guess there are 12
23 volumes of transcript and in those there are the
24 assumptions.

25 MR. ROTHMAN: Essentially, I think, Mr.

1 Trivett, that reference was to the documents which
2 contain the forecasts; that is, the long-term economic
3 outlooks, the energy price trends reports, and the load
4 forecast documents. Those documents are what that CV
5 was calling the basic assumptions on which the
6 Demand/Supply Plan is based. And Mr. Chairman referred
7 to the assumptions on which those assumptions are
8 based, which we have had lengthy discussions about as
9 well.

10 But when that refers to the basic
11 assumptions on which the Demand/Supply Plan is based,
12 it is referring to the documents, the economic
13 forecast, load forecast, the energy price trend
14 reports. Those are all filed as exhibits. The
15 economic forecasts are Exhibits 13 and 15; the load
16 forecast is Exhibit 9.

17 MR. B. CAMPBELL: And there are various
18 others.

19 MR. ROTHMAN: And various others.

20 MR. TRIVETT: Q. So it doesn't refer to
21 assumptions that are given to you before you make the
22 forecast? You are saying that the assumptions are the
23 things which are produced?

24 MR. ROTHMAN: A. Once I produce a
25 forecast, that becomes--

1 Q. An assumption.

2 A. --a set of assumptions for the
3 planners.

4 Q. Thank you. Then if I might move to
5 my fourth section here. Does Hydro forecast for
6 specific segments of the province aggregated into a
7 provincial forecast or is the forecast a unitary
8 province-wide forecast?

9 THE CHAIRMAN: I think that we went into
10 that in great detail this morning with Mrs. Mackesy.

11 MR. TRIVETT: Did you? I see.

12 That has already been dealt with so I
13 could go to the minutes of this morning, could I?

14 THE CHAIRMAN: It has been dealt with,
15 how they do their forecast. There is an Ontario
16 forecast, a provincial forecast.

17 MR. TRIVETT: Q. Well then, could I deal
18 with part of what I was basing on that, and that is the
19 whole question of where lines are located. Is that any
20 part of your forecast?

21 MR. ROTHMAN: A. No.

22 Q. The location of the lines?

23 A. The location of the lines?

24 Q. Yes.

25 A. No.

1 Q. The need for lines between various
2 segments in the province.

3 A. No.

4 Q. No. Is that right, in your position,
5 Mr. Burke, that the whole question of where lines are
6 located is --

7 MR. BURKE: A. We provide load forecast
8 information to transmission planners at our customer
9 level which is by municipal utility for direct
10 industrial customers and for about 50 area offices,
11 retail system. And they combine that with other
12 information they have on the capabilities of the
13 transmission system and transformation stations, and so
14 on, to figure out transmission needs. We have nothing
15 to do with that beyond the supply to them of load
16 information, as I have described it.

17 Q. Well, the reason that we have raised
18 this is taking the example of the Bruce Nuclear. It
19 had been on-line for many years when suddenly in the
20 80s it required another transmission line from Bruce.
21 Is that as a result of your forecast, or how would that
22 come forth?

23 MR. B. CAMPBELL: Mr. Chairman, I spent a
24 lot of days at the hearings to do with those
25 transmission lines and that is about as inaccurate a

1 description of the problem as it is possible to get.

2 And this panel cannot speak to these matters.

3 That is not their job. It is not what
4 they are here to do and it is not what they do at the
5 Corporation.

6 MR. TRIVETT: Well, the question, Mr.
7 Chairman, really is, if it's as a result of the model's
8 shortcomings that this is suddenly needed, then it is
9 important to ask these people about the question.
10 If it is not, then it goes elsewhere in the hearing.

11 THE CHAIRMAN: Questions about the
12 model's shortcomings are quite appropriate questions,
13 but questions about the results of those shortcomings
14 are what the planners do are not appropriate questions.

15 MR. TRIVETT: Quite. I appreciate that.

16 THE CHAIRMAN: So if you have got
17 questions about the model's shortcomings, then make
18 those questions, but what happens as a result of the
19 forecast is not something that these gentlemen -- I
20 thought we had gone over this quite a bit, Mr. Trivett.
21 I must say that...

22 MR. TRIVETT: You mean in other sessions
23 when I wasn't present, sir?

24 THE CHAIRMAN: No. This afternoon. This
25 panel is here to answer questions about forecasting.

1 [4:33 p.m.] THE CHAIRMAN: Well, whether or not that
2 is right, and I make no comment on that, you can
3 certainly ask them questions about their methodology
4 and their performance and things of that nature. That
5 is fine. Ask them about that, if you have questions to
6 ask them.

7 But what happened as a result of their
8 forecasts, unless it impinges on their forecast in some
9 way, I don't think is appropriate to this panel.

10 MR. TRIVETT: Excuse me just one moment,
11 Mr. Chairman.

12 Q. Mr. Burke, the questions of where the
13 flow would be from one part of the province to another,
14 was that dealt with when you were talking about whether
15 you do separate planning for different segments of the
16 province, this morning? Will I find that in the --

17 MR. BURKE: A. No. All we do is supply
18 the demand--

19 Q. By its regions.

20 A. --by region, by customer, to the
21 transmission people; they figure out the flows and what
22 that means.

23 Q. Well then, maybe in the hopes of
24 getting finished this afternoon, Mr. Chairman, I will
25 move to my last section which is just some verification

1 of some things which were raised before.

2 With regard to the forecast made by your
3 department or other departments such as system
4 planning, have you, Mr. Burke, ever had it suggested or
5 told to you, some or all of the best numbers to put in
6 the final forecast, or do they strictly come out of
7 your forecast, your load forecasting itself?

8 A. As I think we are on the record
9 several times as indicating that we have not received
10 such advice or recommendation from other parts of the
11 corporation and that we produce the forecast
12 essentially independently. We have external review and
13 internal review, but the ultimate decision on the
14 forecast is ours.

15 Q. I noted that when Mr. Rosenberg asked
16 you whether there had been any adjustment made to the
17 forecast figure which you supplied the executive
18 officers, I understood your answer was, as you say, in
19 the negative. That's your position.

20 May I ask as a supplementary to that
21 whether there have been any political adjustments of
22 which you could have no knowledge? There is no
23 possibility of that, is there? The forecast is a
24 published document and you see it as you presented it?

25 A. Yes.

1 Q. Yes. Is there any other forecast
2 other than the load forecast discussed in the DSP, is
3 there any other internal forecast?

4 MR. ROTHMAN: A. You mean any other
5 internal load forecast?

6 Q. Yes.

7 MR. BURKE: A. There is only one load
8 forecast.

9 Q. There is only one, I see.
10 The same thing is true of price forecast,
11 or do you have a price forecast as such?

12 A. For electricity?

13 Q. Yes.

14 A. There is a price forecast that's
15 consistent with the recommended plan, and I believe
16 there is a provision in one of the later chapters,
17 maybe Chapter 15, of rate levels for some of the other
18 plans.

19 Q. For what time period would those be?

20 A. I think they cover the full planning
21 horizon.

22 Q. Planning period of the DSP.

23 Is there a separate longer term plan, a
24 50-year plan or something of that kind, which you have
25 as well as this DSP plan to 2014?

1 A. To my knowledge, this is it.

2 Q. In your studies have you ever done a
3 consultation study between energy which is consumed for
4 heating and for air conditioning relative to the highs
5 and lows of outside ambient temperatures? Is that
6 considered in your load forecast?

7 A. Are you asking about individual
8 households or are you asking about in aggregate for the
9 system?

10 Q. In the aggregate.

11 A. You mean how sensitive is load to
12 temperature variation?

13 Q. Ambient temperature, yes.

14 A. We have a comprehensive weather
15 correction system which has analyzed quite carefully
16 the impact on -- well, on load of temperatures above 20
17 degrees and below 15 degrees, I believe it is, and how
18 those temperature changes, those departures from normal
19 temperatures at particular points in the year affect
20 load.

21 Q. Is that a separate document?

22 A. Yes, and it is on the record here.

23 Q. It's on the record here.

24 A. I would have to look up the
25 interrogatory that it is attached to.

1 Q. We can look it up then.

2 It appears that from our view that on
3 certain of the 20 or so peak days of the year, Hydro is
4 wheeling energy, which I believe is the term; it means
5 buying it in Manitoba, say, and selling it in Michigan,
6 for example, or buying it Michigan and Manitoba and
7 selling it in New York.

8 THE CHAIRMAN: Are you talking about
9 swapping back and forth?

10 MR. TRIVETT: Yes.

11 THE CHAIRMAN: That goes on all the time?

12 MR. TRIVETT: Yes.

13 THE CHAIRMAN: What has that got to do
14 with forecasting?

15 MR. TRIVETT: Q. Well, if the forecast
16 of peak -- what I am trying to get at is that in the
17 peak forecast time, is that taken into consideration,
18 that there be movement of energy through the system?

19 MR. BURKE: A. The forecast is simply a
20 forecast of the power that we will generate.

21 Q. Of what you are generating?

22 A. Or purchase. Basically, it's the
23 requirements on Ontario Hydro's system from its
24 customers in Ontario.

25 Q. So the demand does not try to

1 contemplate what the demand would be of buying outside
2 power?

3 A. How we meet the demand is another
4 issue.

5 Q. And you do not include in your
6 system, as demand, sales outside of Ontario?

7 A. That's correct. There is a separate
8 forecast or a separate group that deals with the issue
9 of selling power to people outside Ontario.

10 Q. And is there is a forecast of those
11 quantities that are bought and sold outside of the
12 country?

13 A. I believe Mrs. Mackesy this morning
14 asked the same question and Mr. Campbell gave an answer
15 to that.

16 Q. So that will be in the record.

17 MR. B. CAMPBELL: Well, lest we be
18 completely misleading here, what is in the record is
19 the fact that, yes, there is a forecast that we do not
20 consider pertinent to the planning exercise that we are
21 involved in here, which is to deal with demand and
22 supply options for the purpose of meeting Ontario's
23 electricity service requirements.

24 MR. TRIVETT: So there isn't any
25 over-build in Ontario to require supplying that

1 outside, is that correct, Mr. Burke?

2 THE CHAIRMAN: That's not part of the
3 plan.

4 MR. TRIVETT: Q. It's not part of the
5 plan to over-build in Ontario or --

6 Maybe we will get to this when we come to
7 system planning again, but as far as you are concerned,
8 that which is export is not part of what you forecast?

9 MR. BURKE: A. It is not part of what we
10 forecast.

11 Q. Thank you.

12 Now, I understand that there was a change
13 in the models which you now use. And from what you
14 say, I take it that my question is quite unnecessary,
15 that that had nothing whatsoever to do with the fact
16 that you had stopped advertising and things of that
17 kind. What were the factors that required the change
18 in the model?

19 MR. B. CAMPBELL: Mr. Chairman, I think
20 we are going to have to be a little more specific.
21 These witnesses, each one of them talked about the
22 development and evolution of their various models for
23 the various purposes. I think they are entitled to
24 have a little more specificity than that.

25 MR. TRIVETT: There must be salient

1 reasons for changing a model, Mr. Chairman.

2 THE CHAIRMAN: Yes. But there have been
3 a number of changes of technology or with techniques -
4 I don't know what you would call it - of doing
5 forecasting over the period.

6 So perhaps if you could be specific as to
7 what - there has been quite a bit of discussion about
8 it - perhaps you could be specific what it is you are
9 referring to.

10 MR. TRIVETT: I believe that the other
11 questions which I have are likewise ones which should
12 go to system planning, Mr. Chairman. I am not sure we
13 have total agreement here, but it would be my judgment
14 that they do and that we should leave the matter at the
15 present time and come back to it then. I trust we will
16 not find then that the economic side of it cannot be
17 discussed, but it seems to me that's the risk we have
18 to take.

19 THE CHAIRMAN: I think that's a concern
20 that perhaps the economic side is -- I don't know what
21 you mean by the "economic side." But what will be
22 discussed at the later panels, as I understand it, is
23 the demand management plan and the plans of the
24 corporation to meet the demand as it becomes identified
25 as the primary load.

1 MR. TRIVETT: The problem which I think
2 we see is that if you have management of load, then
3 that is directed by your economics; and that when you
4 are discussing how you will supply the load, whether
5 you should try to manage it rather than supply it, is
6 an economic argument arising out of the economics of
7 how you produce the energy and how you can shift it
8 between periods.

9 THE CHAIRMAN: That sounds to me like
10 supply side considerations.

11 MR. TRIVETT: Without a doubt there are
12 aspects, but it seems to me there are economic aspects
13 at the same time, Mr. Chairman. But I don't think
14 that's necessarily a reason to try and get these men to
15 answer it without the system people working with them.

16 MR. B. CAMPBELL: If it's of any
17 assistance to my friend, the question of the costs of
18 demand management options, the costs of non-utility
19 generation, various major supply options, will all be
20 dealt with in their respective panel, if that's what
21 you mean by "economics".

22 Mr. Rothman is here to speak to the
23 economic forecast in the sense of gross domestic
24 product, how that relates to the load forecast and so
25 on, and he will not be returning. I don't expect to be

1 revisiting those because -- well, I will resist.

2 THE CHAIRMAN: All right.

3 MR. TRIVETT: Well, I think you can see,
4 Mr. Chairman, that there are some comparisons that are
5 not just comparisons based on gross domestic product,
6 but comparisons of alternative ways of accomplishing
7 some end result, which are essentially economic
8 comparisons.

9 But, presumably, the persons who deal
10 with those must deal with that kind of question and
11 someone should be here to answer those questions in due
12 course.

13
14
15
16
17
18
19
20
21
22
23
24
25 ...

1 [4:50 p.m.] MR. B. CAMPBELL: I fully expect that we
2 will have people that can speak to the costs associated
3 with the various options and how those costs are
4 analyzed.

5 MR. TRIVETT: Thank you, Mr. Chairman.

6 THE CHAIRMAN: I think, Ms. Couban,
7 rather than put you on and then cut you off, I think
8 you are the next one.

9 MS. COUBAN: I believe so, Mr. Chairman.

10 THE CHAIRMAN: And I guess the last one;
11 would that be right?

12 MS. COUBAN: I think so.

13 THE CHAIRMAN: Well then, we will adjourn
14 then until ten o'clock.

15 Am I right about that? Is there anyone
16 else that thinks that they are going to be
17 cross-examining or re-examining? (No response)

18 No. All right.

19 MR. B. CAMPBELL: Mr. Chairman, if I
20 could ask an indulgence, probably is a large
21 indulgence.

22 We all try to control our schedules to
23 some degree. I have an estimate from Ms. Couban. Does
24 the Panel have any estimate of how long it might be? I
25 expect to be fairly short in re-direct and I would like

1 to move around some schedule commitments, if I could
2 get some idea.

3 THE CHAIRMAN: Well, any sort of
4 prediction of how long anything is going to take to do?
5 It usually doesn't -- I won't try to compare it to
6 forecasting, but -(laughter)- what are you telling me?
7 When do you want to be out of here, I guess, is...
8 (Laughter)

9 MR. B. CAMPBELL: I am entirely at the
10 Panel's disposal, of course. If I could get some idea,
11 it would be useful in terms of certainly my own
12 scheduling and perhaps one or two others, but that is
13 all I am asking. If you cannot --

14 THE CHAIRMAN: What were you saying? I
15 am sorry. When did you say you want to be out? I
16 didn't hear that.

17 MR. B. CAMPBELL: You didn't, you are
18 right, and you are not going to. (Laughter)

19 THE CHAIRMAN: Well, I think that given
20 Ms. Couban's estimate and my guess about the Panel's
21 questions, I think you are the one that is going to
22 make that determination as to when we stop.

23 MS. COUBAN: And, Mr. Chairman, I
24 anticipate being closer to the one hour estimate than
25 the two hours, if that assists Mr. Campbell, at all.

1 THE CHAIRMAN: All right. People know
2 how long their questions are going to be. The trouble
3 is, they do not know how long the answers will be.

4 We will adjourn until tomorrow morning at
5 ten o'clock.

6 THE REGISTRAR: The hearing will adjourn
7 until ten o'clock tomorrow morning.

8

9

10 ---Whereupon the hearing was adjourned at 4:53 p.m., to
be resumed on Thursday, May 16, 1991.

11

12

13

14

15

16

17

18

19

20

21

22

23

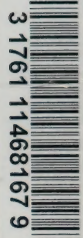
24

25 JAS/KM/BV [c. copyright 1985]

E R R A T A
and
C H A N G E S

To transcript for Tuesday, the 14th day of May, 1991,
Volume 13.

<u>Page No.</u>	<u>Line No.</u>	<u>Discrepancy</u>
2369	4	That's an accumulate description.
Should be:		That's an accurate description.



3 1761 11468167 9